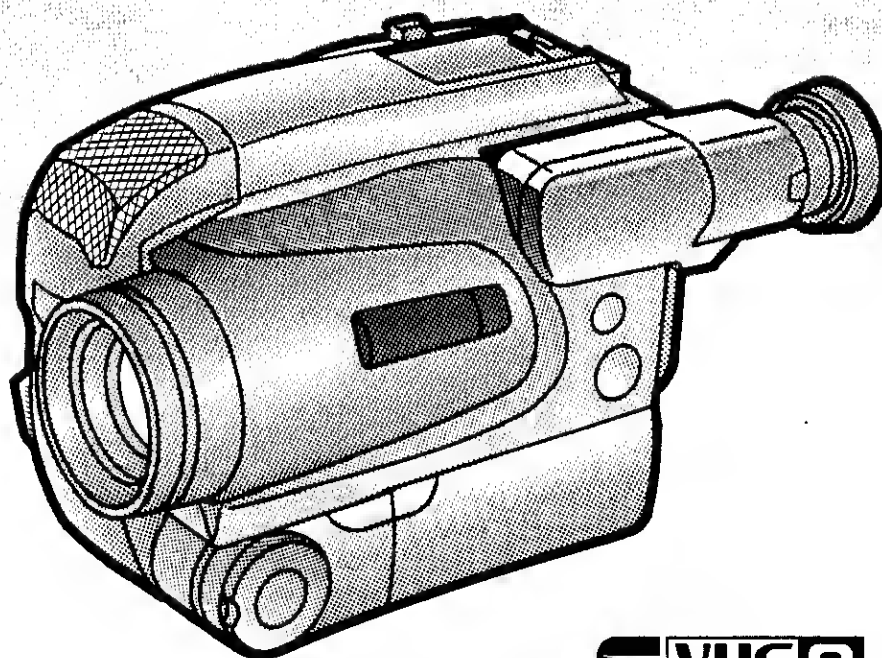


Panasonic

S-VHS-C Movie Camera

NV-S85A

Operating Instructions



S VHS C VHS
625 PAL

Basic Operations

Before Shooting

5~

Shooting

10~

Playback

14~

Advanced Operations

18~

Reference Guide

44~

Before attempting to connect, operate or adjust this product, please read these instructions completely.

Dear Customer,

We would like to take this opportunity to thank you for purchasing this Panasonic Movie Camera.

Please read these Operating Instructions carefully and keep them handy for future reference.

Please keep your receipt as proof of purchase for all warranty repairs.

Caution:

Injury or material damage resulting from any kind of use that is not in accordance with the operating procedures explained in the Operating Instructions are the sole responsibility of the user.

Shooting with this Movie Camera is possible simply by:

1. Attaching the charged Battery Pack.
2. Inserting a Video Cassette.
3. Pressing the Start/Stop Button.



Guide to these Operating Instructions

These Operating Instructions consist of 3 sections: Basic Operations, Advanced Operations and Reference Guide.

Basic Operations:

(Before Shooting, Shooting, Playback)

In this section, the preparations for basic shooting and basic playback are described.

People inexperienced in the use of a Movie Camera should read from this section.

Advanced Operations:

The use of various functions and the necessary preparations for performing these operations are described in this section.

Please study and try out these functions one by one, until you have all the capabilities of the Movie Camera at your command.

Reference Guide:

This section describes a troubleshooting guide.

Before Use

■ After Opening the Packing Case...

1. Check the Standard Accessories. (p. 5)

Note:

If the accessories are not going to be used immediately, put them back into the Packing Case and store them carefully.

2. Charge the Battery Pack. (p. 6)
3. Attach the Charged Battery Pack. (p. 6)
4. Insert a Video Cassette. (p. 6)
5. Adjust the length of the Grip Belt. (p. 8)
6. Attach the Shoulder Strap. (p. 8)
7. Adjust the Viewfinder to your eyesight. (p. 8)
8. Remove the Lens Cap. (p. 8)

After completing the above preparations, you are ready for shooting.

Note:

When the Movie Camera is turned on, it is in the Shooting Pause Mode.

If the Start/Stop Button is then pressed, a new recording starts.

Therefore, be sure to break out the cassette's safety tab to protect important recordings against accidental erasure. (p. 16)

Information for Your Safety

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

S-VHS-C Movie

- The rating plate is on the bottom side of the Movie Camera.

AC Adaptor

- The rating plate is on the bottom side of the unit.

FOR YOUR SAFETY

■ DO NOT REMOVE THE OUTER COVER.

To prevent electric shock, do not remove the cover. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

IF THE SUPPLY CORD OF THIS EQUIPMENT IS DAMAGED, IT MUST BE REPLACED BY THE SPECIAL CORD.

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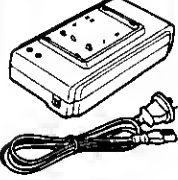
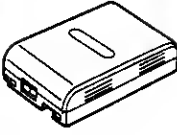
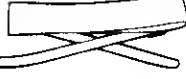

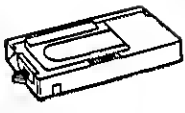
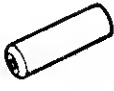

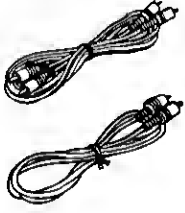

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Before Shooting

Checklist for the Standard Accessories

Accessories Used for the Basic Operations		
AC Adaptor Set  For supplying power to the Movie Camera or for charging the Battery Pack	Battery Pack  For supplying power to the Movie Camera •Optional Battery Pack is VW-VBS10E. (See page 51.)	Shoulder Strap 
Accessories Used in the Advanced Operations		
DC Input Cable  For connecting the AC Adaptor to the Movie Camera to supply it with power	Cassette Adaptor  For playback on a Video Tape Recorder	Battery  For the Cassette Adaptor
Button-Type Battery  For storing date and time in the memory	Audio/Video Cable  For connecting the Movie Camera to a TV set or VTR	S-Video Cable  For connecting the Movie Camera to a TV set or VTR

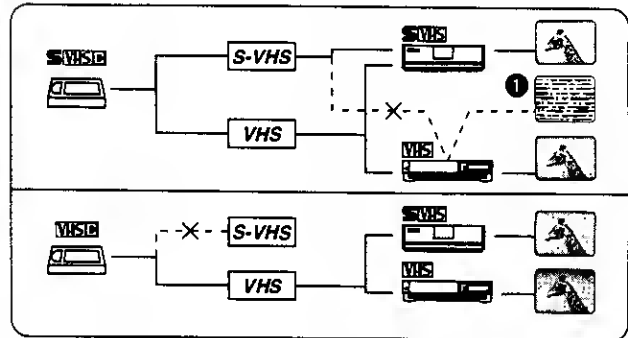
Note:

The AC Adaptor Set includes the AC Adaptor VW-AS4E and a 2-pin AC Mains Cable.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

Usable Video Cassettes



Use only video cassettes carrying the **S-VHS** or **VHS** logo.

□ means compact.

The S-VHS video format is newly developed based on the VHS video format to realize higher picture quality, and it offers compatibility with the VHS video format. However, special attention should be paid to the following points:

Notes:

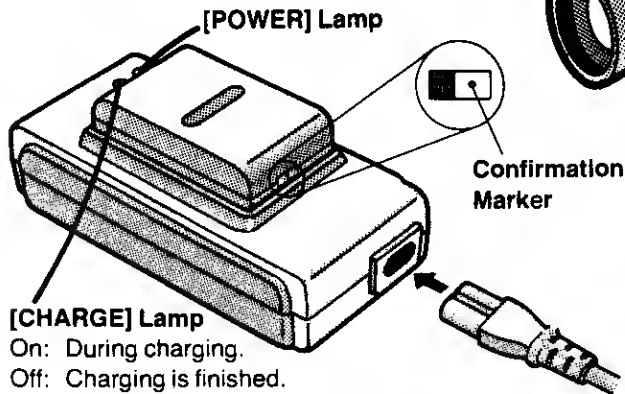
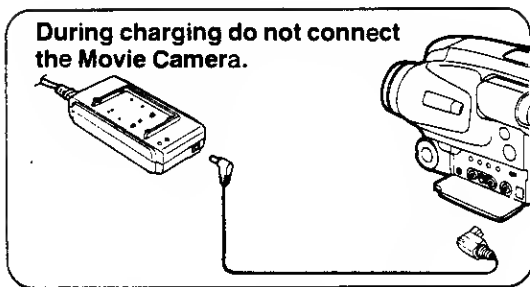
1. When your VTR is a standard VHS VTR (carrying the VHS logo), shoot with this Movie Camera in the VHS format, even when using S-VHS-C video cassettes. If an S-VHS recording is played back on a standard VHS VTR, the picture will be totally distorted as shown in the illustration ① above. However, by connecting this Movie Camera directly to a TV set, playback of S-VHS recordings becomes possible (p. 38). A standard VHS VTR that also carries the "SQPB" logo (S-VHS Quasi Playback), on the other hand, is capable of playing back S-VHS recordings.
2. On video cassettes carrying the VHS-C logo, it is not possible to record in the S-VHS format.

When playing back video cassettes on this Movie Camera, the format used for shooting will be detected and automatically selected for playback.

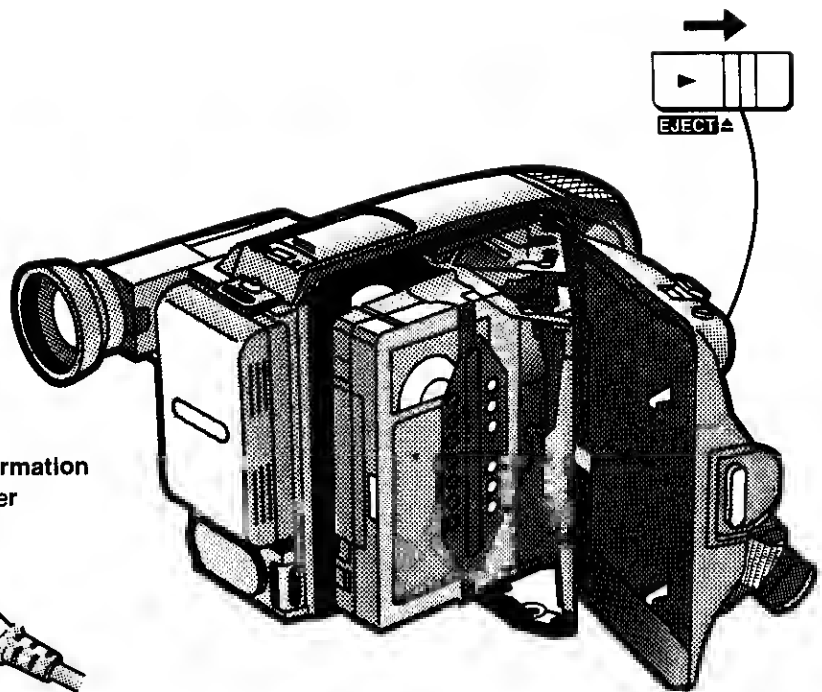
Only when using an S-VHS-C video cassette for recording in the VHS format, it is necessary to select the recording format (p. 10).

S-VHS: Recording in the S-VHS format

VHS: Recording in the VHS format



See p. 49 for further details on Battery Pack Charge.



Purpose	Procedure	
How to Charge the Battery Pack		1 Attach Battery.
How to Attach the Charged Battery Pack		1
How to Remove the Battery Pack		1
How to Insert the Video Cassette Before inserting the video cassette, make sure that the tape is tight. If it is loose, turn the cog wheel into the direction of the arrow to tighten it.		1

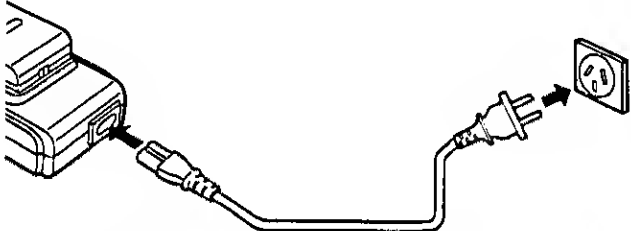
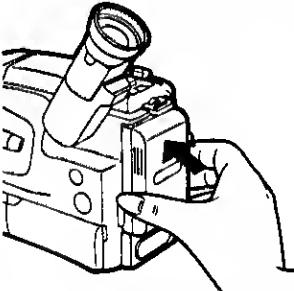
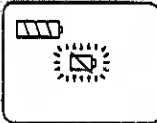

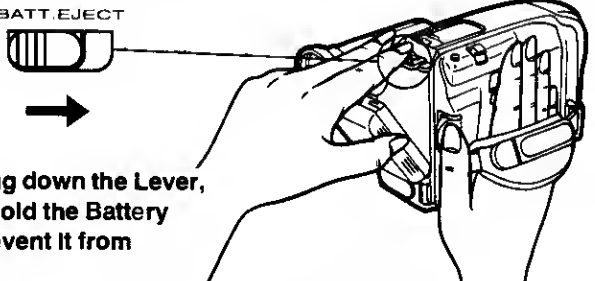
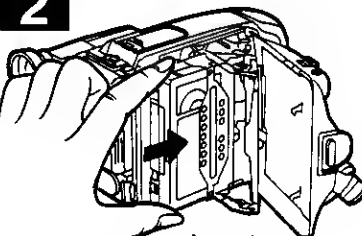
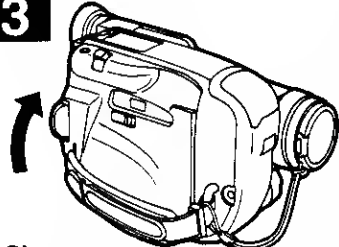


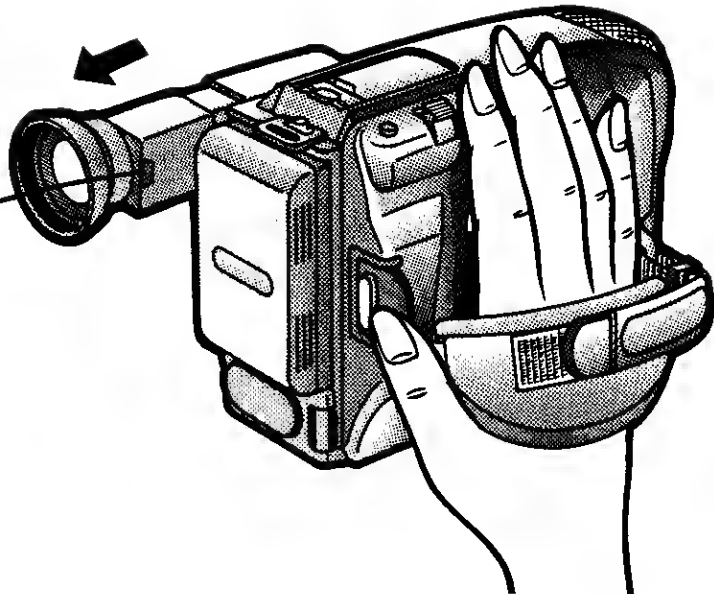
Charging Time and Maximum Time for Continuous Shooting

Battery Pack No.	Charging Time	Max. Shooting Time
Supplied	Approx. 50 min.	Approx. 40 min.
VW-VBS10E	Approx. 50 min.	Approx. 40 min.
VW-VBS20E	Approx. 100 min.	Approx. 80 min.
VW-VBH10E	Approx. 60 min.	Approx. 50 min.
VW-VBH20E	Approx. 120 min.	Approx. 100 min.

- The figures in the table above are based on an ambient temperature of 25°C. At low temperature, the shooting time will be considerably shorter.
- As the condition of the Battery Pack can vary greatly even in normal use, it is advisable to charge a few hours longer than the above suggested times to ensure full charging.

Before Shooting

		Remarks, etc.
<p>2</p>  <p>Plug into AC Adaptor. Plug Into mains.</p>		<p>■ Removing the Battery Pack Slide it to the opposite direction to step 1.</p> <ul style="list-style-type: none"> • Be sure to insert the mains plug completely into the correct socket.
<p>Attach the Battery Pack with its Confirmation Marker facing upward to the lower Battery Pack Holder.</p>	<p>2</p> 	 <p>If an exhausted Battery Pack is attached, the "  " indication in the Viewfinder flashes.</p>
<p>2</p>  <p>When allding down the Lever, be sure to hold the Battery Pack, to prevent It from dropping.</p>		<ul style="list-style-type: none"> • Never remove the Battery Pack during recording or playback, because the tape will remain in contact with the video heads and this could cause damage to the heads and tape.
<p>2</p>  <p>Insert.</p>	<p>3</p>  <p>Close.</p>	<p>■ Ejecting the Video Cassette Slide the [EJECT] Lever and pull out the Video Cassette. Close the Cassette Compartment Cover.</p> <ul style="list-style-type: none"> • It is not possible to take out the video cassette during shooting. • When a blank (unrecorded) video cassette is inserted, a picture which contains only picture noise will be played back for a short moment in the Viewfinder.

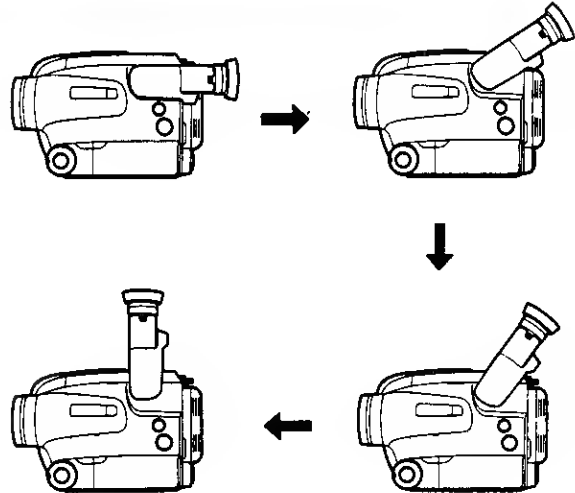


- To prepare the Movie Camera for shooting, grip the rear of the Viewfinder and gently pull to its extended position.

Purpose	Procedure	
How to Adjust the Length of the Grip Belt Adjust the Grip Belt so that the Start/Stop Button can easily be pressed with the thumb and the [W • T] Zoom Lever (p. 18) can be pushed with the index finger.	1 	2
How to Attach the Shoulder Strap	1 	2 (More than 2 cm)
How to Adjust the Viewfinder	1 	2
How to Remove the Lens Cap	1 	2

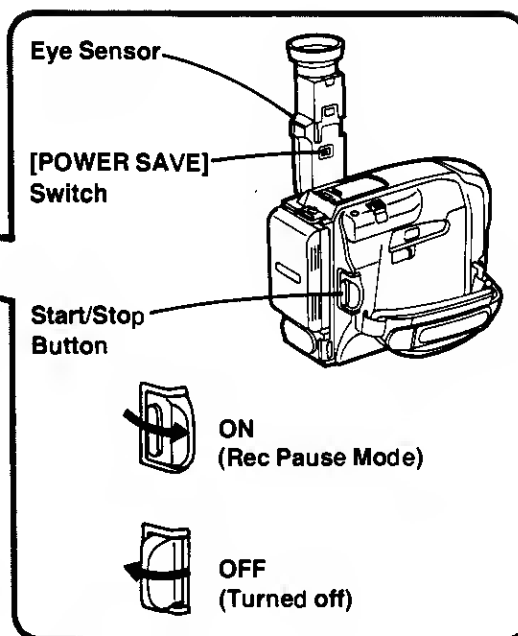
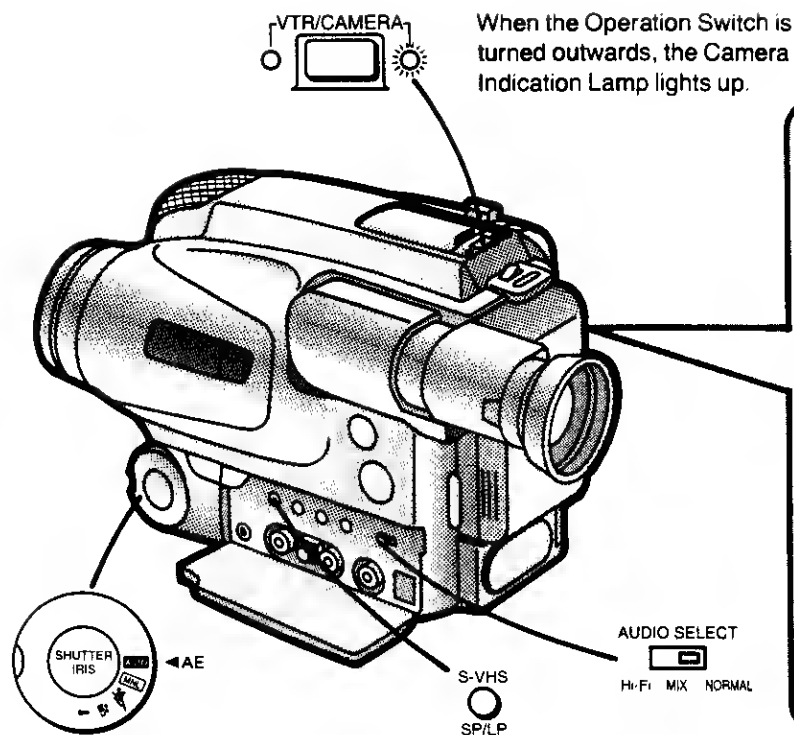
Adjusting the Angle of the Viewfinder

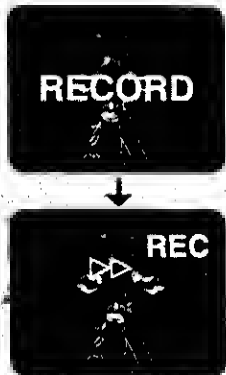
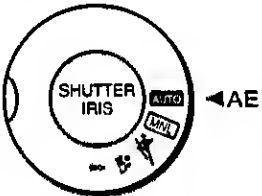
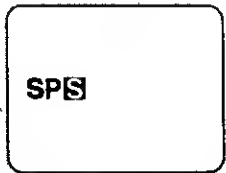
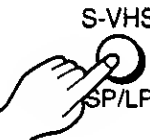
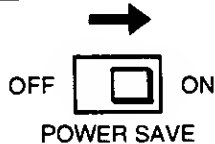
The tilting range of the Viewfinder is 90° (4 positions are marked by click stops).



Before Shooting

		Remarks, etc.
3		
3		
3	<p>Eyepiece Corrector Ring</p> <p>While looking into the Viewfinder, turn the Corrector Ring so that the Indications in the Viewfinder can be clearly seen.</p>	<ul style="list-style-type: none"> •When extending the Viewfinder do not grasp it by the Eyecup. The Eyecup could become detached from the Viewfinder. •Do not apply any pressure on the Viewfinder except when extending or retracting it. •Be sure to retract the Viewfinder after shooting.

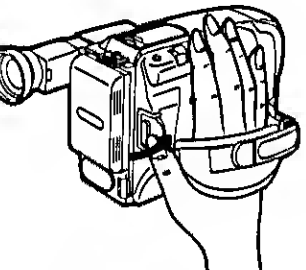
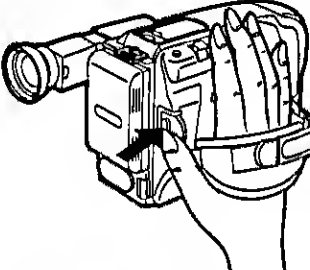


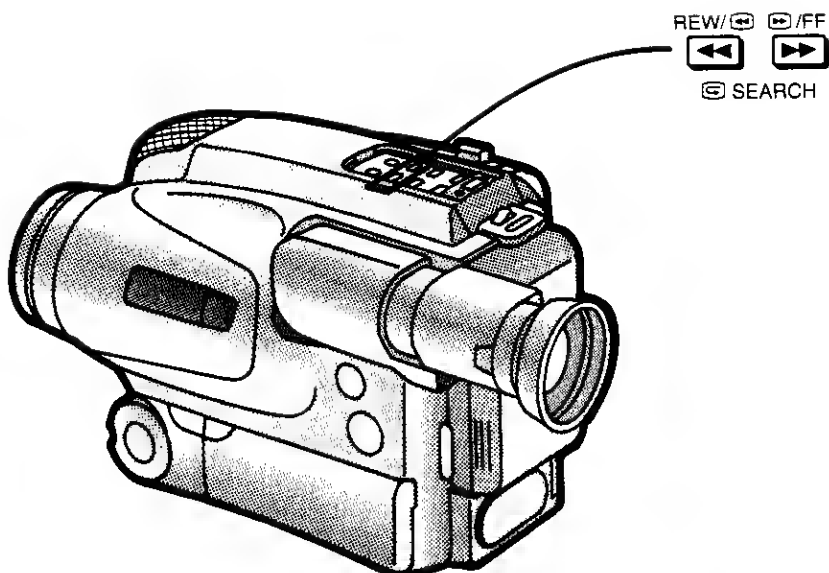
Purpose	Viewfinder	Procedure
1 How to Shoot from the Beginning of the Video Cassette		1 
■ Selecting the Desired Recording Format and Recording Speed		1  <p>Press the Button before shooting.</p>
■ Auto Power Save Function When the Movie Camera is in the shooting pause mode but you are not looking into the Viewfinder, the Viewfinder will be turned off automatically to prevent unnecessary power consumption. The Viewfinder will be turned on automatically when it is brought close to your face.		1  <p>Set the Switch to "ON".</p>

Notes for Auto Power Save Function

- The "Eye Sensor", installed under the Viewfinder, is used to turn the Viewfinder on automatically when the Viewfinder is in close proximity to your face.
- When the Viewfinder is turned off, the Auto Focus Function, the Digital Zoom Function, and the Digital Image Stabilizer Function will be cancelled.
- The Auto Power Save Function only operates while the Movie Camera is switched on.
- The distance at which the Auto Power Save Function turns the Viewfinder on/off may vary slightly depending on the usage condition.
- The Auto Power Save Function works even if there is no video cassette in the Movie Camera.
- When using the AC Adaptor, the Auto Focus Function, Digital Zoom Function and Digital Image Stabilizer Function are not cancelled.
- If the "Eye Sensor" is exposed to direct sunlight, the Auto Power Save Function may not work.

Shooting

		Remarks, etc.
<div data-bbox="15 907 63 963">2</div>  <p>Turn operation switch out.</p>	<div data-bbox="411 907 459 963">3</div>  <p>Press Start/Stop Button.</p>	<p>■ To Pause the Shooting Press the Start/Stop Button again.</p> <p>■ To Stop Shooting Turn in the [OPERATE] Switch.</p>
		<p>By pressing the [S-VHS • SP/LP] Button repeatedly, the indication will change as follows. The selected indication is shown both in the Viewfinder.</p> <p>→ SP → LP → SP → LP →</p> <p>When a VHS-C Cassette tape is in the Movie Camera, pressing this button repeatedly will only change the indication between "LP" and "SP".</p> <ul style="list-style-type: none"> • Selection is only possible in the Recording Pause Mode.
		<p>The Auto Power Save Function does not work in the following conditions.</p> <ul style="list-style-type: none"> • During shooting • In the VTR mode (p. 14) • The Movie Camera is switched off.



Purpose	Viewfinder	Procedure
2 How to Pause the Shooting		1 To Pause the Shooting Press in the Shooting Mode.
3 How to Check the End of the Recorded Scene For occasionally important scenes, use this check function during shooting to confirm that the recording has been performed correctly.		1 in the Shooting Pause Mode.
4 How to Locate a point where you wish to add a new scene This function lets you shoot the individual scene a little longer than actually required. You can then rewind the tape and determine the exact point where you wish to join the next scene. When the [SEARCH] Button is then released, the Movie Camera returns to the Shooting Pause Mode.		1 ■ Reverse direction Keep pressed while in the Shooting Pause Mode.

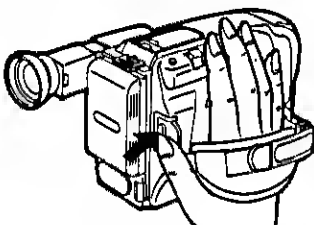
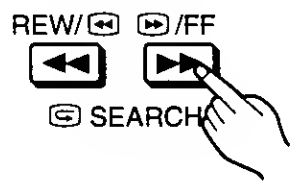
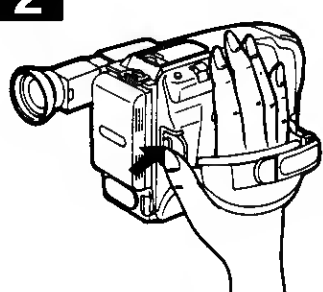
Notes for the Shooting Pause Mode

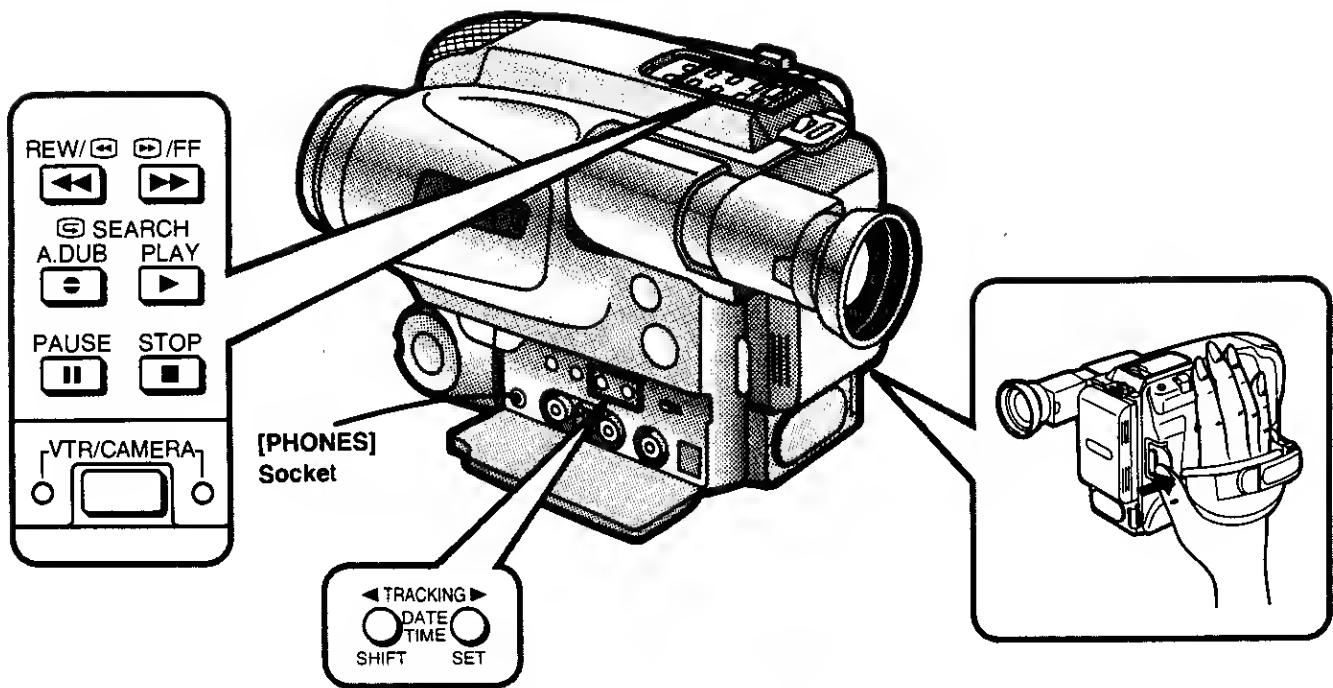
When putting the Movie Camera in the Shooting Pause Mode, a playback picture may be displayed briefly (for 0.1–0.5 second) in the Viewfinder.

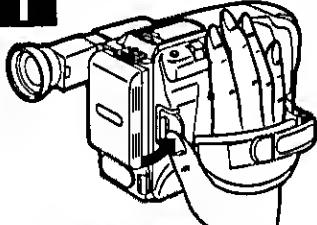
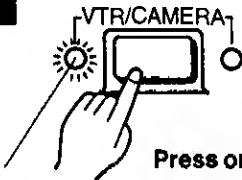
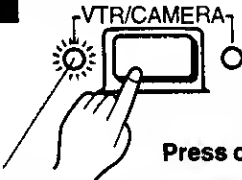
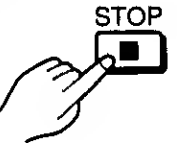
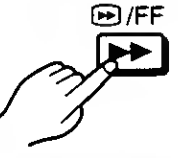
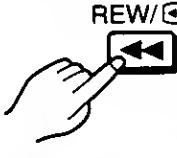
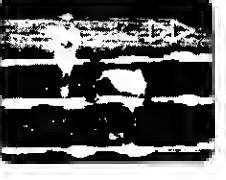
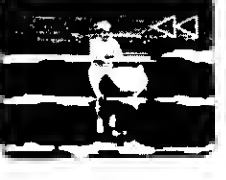
However, this is for reading the VITC value and is not malfunction.

This occurs in the following cases:

- When the Movie Camera is put in the Shooting Pause Mode for the first time after inserting a new video cassette into the Movie Camera.
- When the Movie Camera is put in the Shooting Pause Mode by switching back from the VTR Mode to the CAMERA Mode without having performed any playback after fast-forwarding or rewinding the tape.
- When the Movie Camera is put in the Shooting Pause Mode for the first time after attaching the Battery Pack (or connecting the AC Adaptor) when the Button-Type Battery is exhausted.

		Remarks, etc.
<p>2 To start the Shooting</p>  <p>Press in the Shooting Pause Mode.</p>		<ul style="list-style-type: none"> •If the Movie Camera is left in the Shooting Pause Mode for more than 6 minutes, it will automatically switch off to protect the tape and to conserve battery power. To resume shooting from this condition, turn in the [OPERATE] Switch (the Movie Camera is switched off) and then turn it out again.
		<ul style="list-style-type: none"> •The final 2 seconds of the last recorded scene will be played back in the Viewfinder and then the Movie Camera is returns to the Shooting Pause Mode.
<p>1 Forward direction</p>  <p>Keep pressed while in the Shooting Pause Mode.</p>	<p>2</p>  <p>Press Start/Stop Button.</p>	<ul style="list-style-type: none"> •When the [REW/FF] Button is kept pressed down: The Indication "◀◀" appears in the Viewfinder. The scene is played back in reverse direction at 3 times normal speed (SP Mode). •When the [FF/FF] Button is kept pressed down: The Indication "▶▶" appears in the Viewfinder. The scene is played back in forward direction at normal speed.



Purpose	Procedure	
<p>1 How to Play Back via the Viewfinder</p> <p>The playback of the recorded tape can be watched in the Viewfinder.</p>	<p>1</p>  <p>Turn operation switch out.</p>	<p>2</p>  <p>Press once.</p> <p>The "VTR" indication Lamp lights up.</p>
<p>2 How to Rewind or Fast-Forward the Tape</p> <p>Perform these operations with the Movie Camera in the VTR Mode ("VTR" Indication Lamp is lit) and in the Stop Mode.</p>	<p>1</p>  <p>Press once.</p> <p>The "VTR" indication Lamp lights up.</p>	<p>2</p> 
<p>3 How to Use the Cue, Review and Still Playback Functions during Normal Playback</p>	<p>■ For Cue Playback</p>  <p>Keep pressed.</p>	<p>■ For Review Playback</p>  <p>Keep pressed.</p>
	<p>Cue Playback Mode</p> 	<p>Review Playback Mode</p> 

Tracking Adjustment



White noise

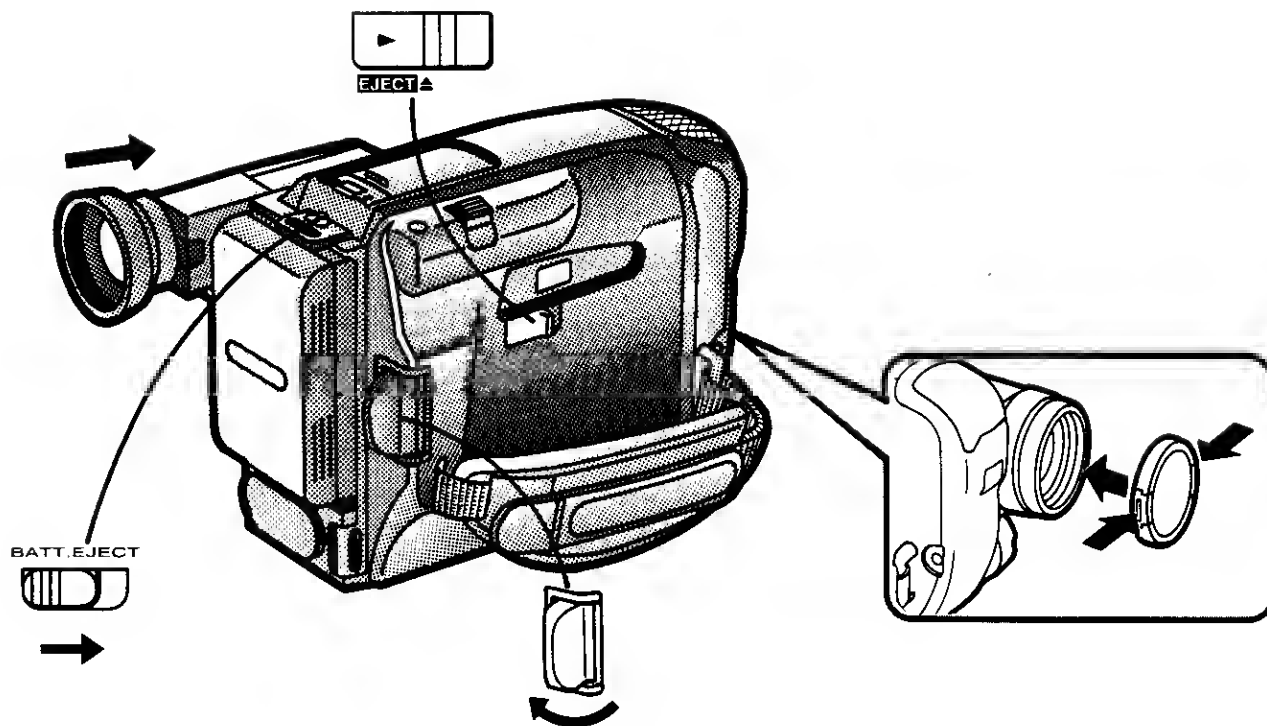
When playing back a recorded tape, especially a tape recorded on another Movie Camera, horizontal bands of white noise may appear in the picture. If this occurs, the tracking needs to be adjusted.

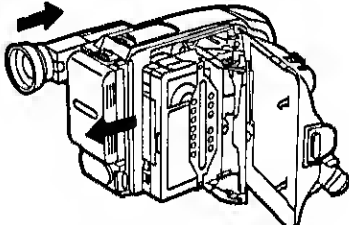
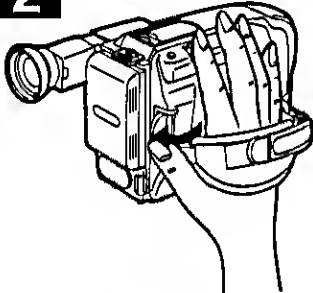
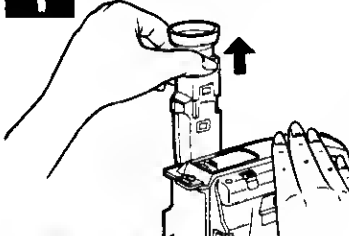
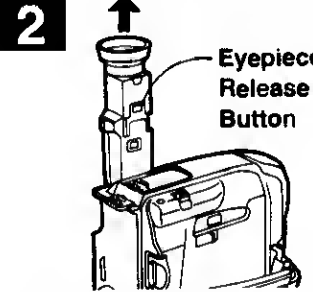
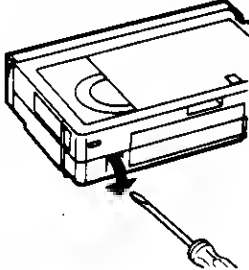
Press both the [◀ TRACKING] and [TRACKING ▶] Buttons simultaneously.

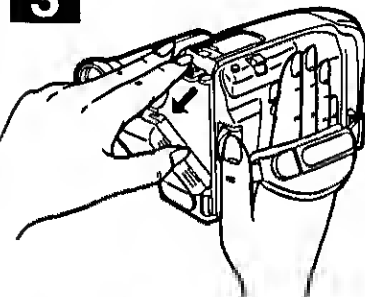
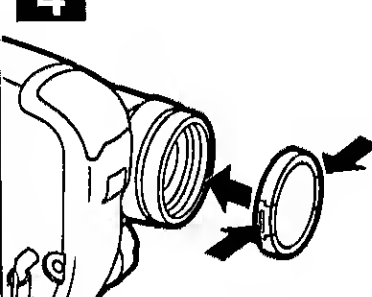


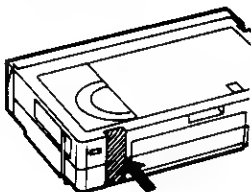
Eliminate any noise bars by adjusting the [◀ TRACKING] or [TRACKING ▶] Button.

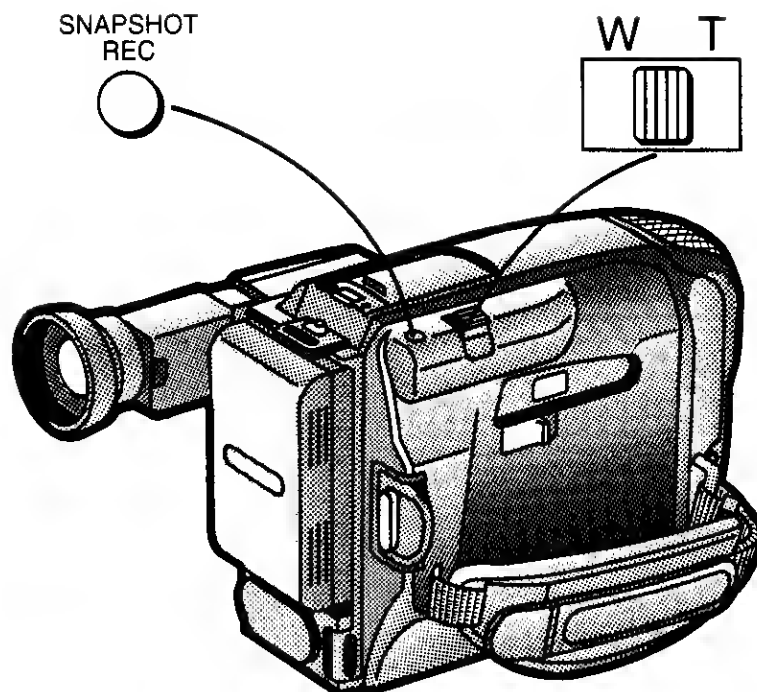
- It may not be possible to completely eliminate these noise bars.

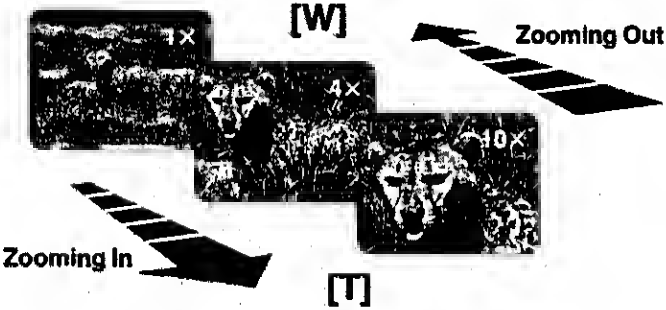
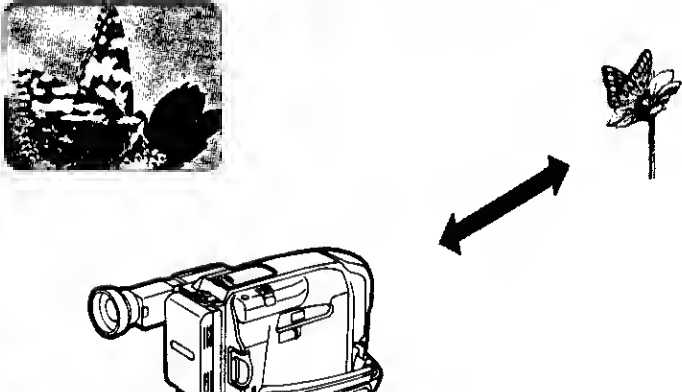

		Remarks, etc.
3 The tape will stop automatically when it reaches the beginning.	4 When the tape reaches its end during playback, it will be rewound automatically.	■ To Stop the Playback Press the [STOP] Button. ■ For Playback with Sound To be able to enjoy the playback with the recorded sound connect stereo headphones (optional) to the [PHONES] Socket. (When playing back a cassette tape on which audio dubbing has been performed, refer to p. 34.)
■ For Fast-Forward 	■ For Rewind 	<ul style="list-style-type: none"> • When the tape reaches its end during Fast-Forward, it will be rewound automatically. • When the tape reaches the beginning during Rewind, it will stop automatically.
■ For Still Playback 	 To return to normal playback	<ul style="list-style-type: none"> • The sound will be played back only during normal playback. • In the Cue, Review and Still Playback Modes, horizontal noise bars appear in the picture, or the picture may become black and white or distorted. However, this is normal and not a malfunction. • The horizontal noise bars have a different pattern in the SP mode and LP mode. The illustrations on the left show the noise bar pattern of the LP mode.
Still Playback Mode 		

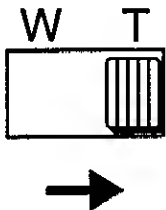
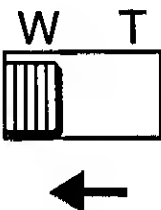
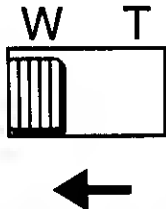



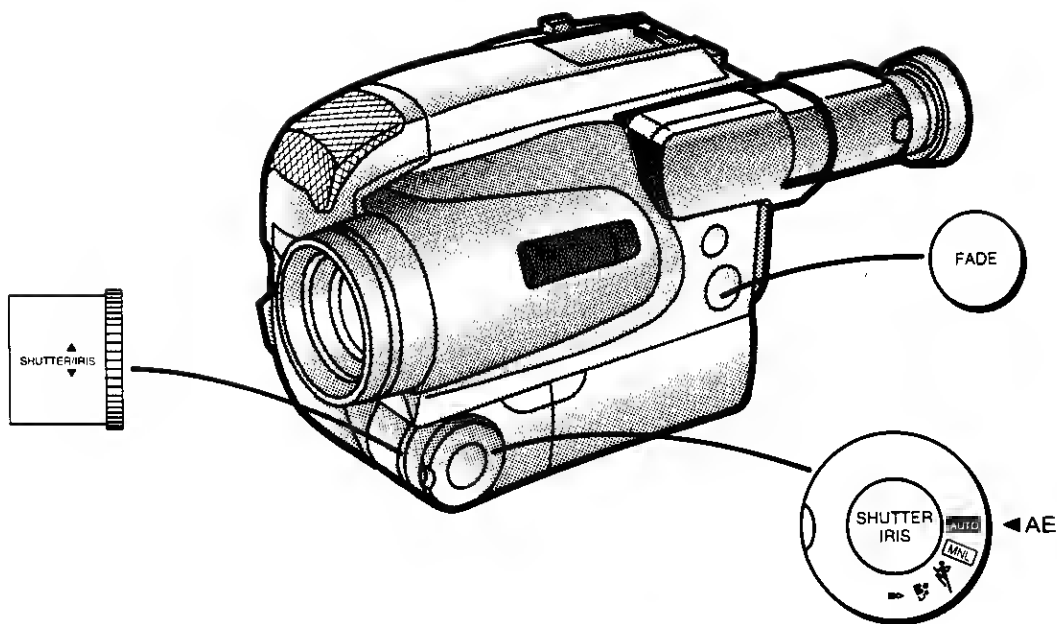
Purpose	Procedure	
After Use	1  Remove the Video Cassette.	2  Turn In operation switch.
How to Clean the Viewfinder If dust has entered the Viewfinder, clean it in the following way:	1  Grasp projections and pull Viewfinder to its extended position.	2  Pull out the Eyecup while pressing the Button.
How to Prevent Accidental Erasure of Recordings When recording on a previously recorded tape, the previously recorded contents will be erased.	■ To protect important recordings against accidental erasure:  Break off the safety tab with a screwdriver. (Some cassettes have sliding-type safety tabs.)	

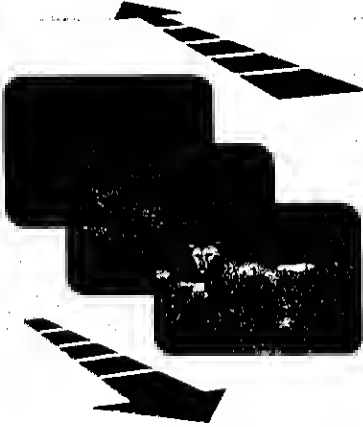



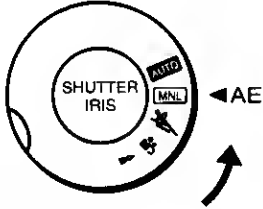
		Remarks, etc.
<p>3</p>  <p>Remove the Battery Pack.</p>	<p>4</p> 	<ul style="list-style-type: none"> • When the Movie Camera is not going to be used for a long time, turn on the Movie Camera occasionally to prevent malfunction. • Be sure to retract the Viewfinder after shooting.
<p>3</p>  <p>Remove dust with a blower brush.</p>	<p>4</p>  <p>Replace the Viewfinder.</p>	<ul style="list-style-type: none"> • Consult your dealer for a suitable blower brush.
<p>■ Recording onto a Video Cassette with a Missing safety tab:</p>  <p>Cover the hole with two layers of adhesive tape.</p>		

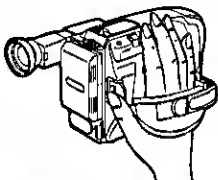
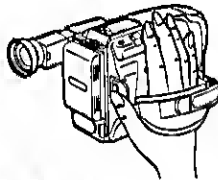


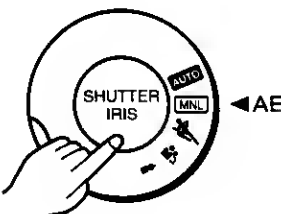
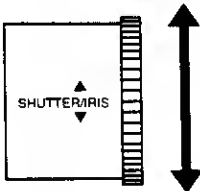


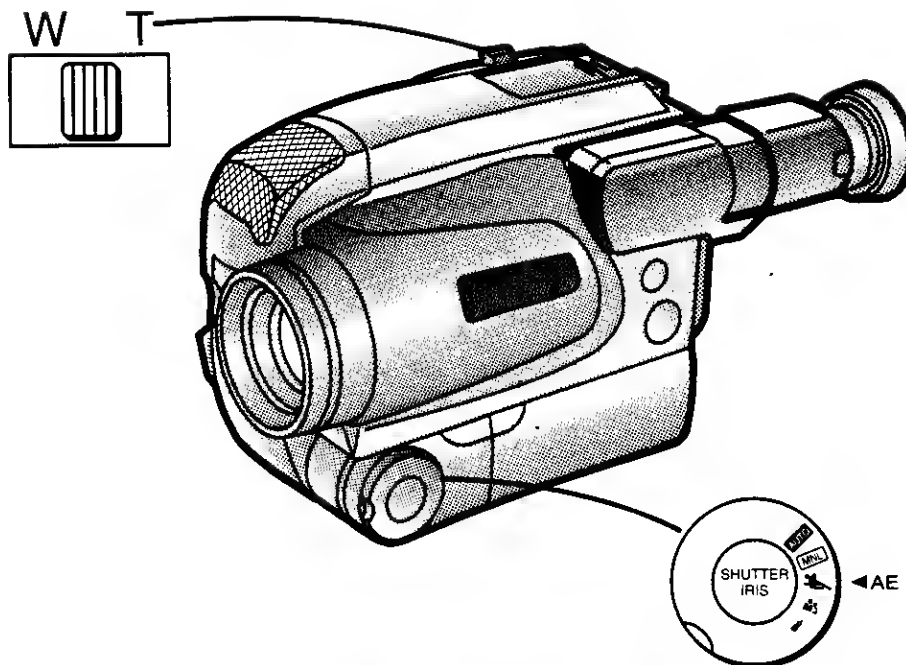
Purpose	Viewfinder
<p>How to Make the Subject Larger or Smaller During Shooting</p> <p>The zoom range extends from 1× to 10×.</p> <p>For the Digital Zoom Function, see p. 26.</p>	 <p>•The Zoom Magnification Indication changes in the Viewfinder.</p>
<p>How to Approach Very Small Subjects and Shoot Them Greatly Enlarged</p> <p>In the maximum wide-angle, the subject can only be focussed down to a minimum distance of only 5 mm between lens and subject.</p> <p>In the maximum tele setting, the focus can be adjusted only for subjects at a distance of more than 1.2 m from the lens.</p>	
<p>How to Shoot a Still Picture for 5 Seconds (Snapshot)</p> <p>Recording a still picture for approx. 5 seconds can be performed by pressing a single button.</p> <p>(When using this function repeatedly, wait at least 2 to 3 seconds before pressing this Button again.)</p>	 <p>•The picture in the Viewfinder stands still, too.</p>



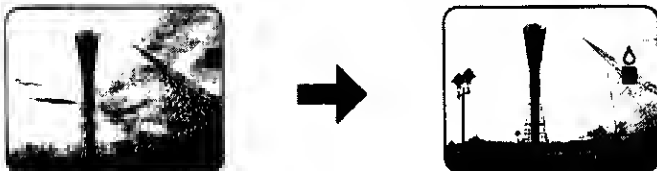
Procedure		Remarks, etc.
1 ■ Zooming In 	1 ■ Zooming Out 	<ul style="list-style-type: none"> • The zooming speed varies depending on how far the [W•T] Zoom Lever is pushed towards "W" or "T". (The further it is pushed, the faster the zooming speed becomes.)
1  Keep pushed until maximum wide-angle setting is reached.		<ul style="list-style-type: none"> • To get more or less of the subject into the picture, change the distance between the lens and the subject. • As the depth of field is very small in this mode, even slight camera movements can cause the subject to go out of focus. Therefore, it is recommended to use a tripod (optional). • When shooting pictures in a photo album or a similar situation with insufficient lighting, use a Video DC Light (optional).
1  Press while in the Shooting Pause Mode.		<ul style="list-style-type: none"> • Since the still picture is recorded from the image memory, the picture quality may be slightly inferior to that of normally recorded pictures. • To prevent picture distortion, do not move or shake the Movie Camera during still picture shooting. • While the Digital Wipe Function or the Digital Mix Function is activated, this function cannot be operated. • If the Viewfinder has been turned off by the Auto Power Save Function, the Snapshot Function cannot be activated.



Purpose	Viewfinder	Procedure
<p>How to Fade In Picture and Sound</p> <p>At the beginning of a movie, etc. fading in is often used. For example, after recording the title, starting the first scene with the Fade-in Function is very effective.</p>		<p>1</p>  <p>Keep pressed while in the Shooting Pause Mode.</p>
<p>How to Fade Out Picture and Sound</p> <p>Fading out is used to create a soft ending or (together with fade-in) for a soft transition from one scene to the next.</p>		 <p>Press during shooting at the point where you wish to fade out.</p>
<p>How to Adjust the Shutter Speed and Iris</p> <p>In the Manual Mode, it is possible to adjust both the shutter speed and the iris.</p>	<div data-bbox="868 1397 1038 1525">▶ 1/50</div> <div data-bbox="868 1576 1038 1704">▶ 1/4000</div> <div data-bbox="868 1778 1038 1906">1/50 ▶ CLOSE</div> <div data-bbox="868 1957 1038 2085">1/50 ▶ OP+18dB</div>	 <p>Set the [AE] Dial to [MNL].</p>

		Remarks, etc.
<div>2</div> <div></div> <div>Press after the picture in the Viewfinder has disappeared.</div> <div></div> <div>Press after the picture in the Viewfinder has disappeared.</div>	<div>3</div> <div></div> <div>Release after approx. 3 seconds.</div> <div></div> <div>Release.</div>	
<div></div> <div>Press.</div> <div>By pressing the button repeatedly, it is possible to change between the Shutter Speed Indication and the Iris Value Indication.</div>	<div></div> <div>Turn.</div>	<ul style="list-style-type: none">•When shooting with the iris wide open, a blue sky may become whitish.•In case of extremely strong backlight, it may not be possible to brighten up the subject sufficiently.•Depending on the angle of the sunlight in shooting, star-shaped light reflexes may be recorded in the picture.•When shooting with a high shutter speed, the playback picture will be slightly darker. <p>In the Shutter Speed Indication Mode: Turning upward: The shutter speed becomes higher. Turning downward: The shutter speed becomes lower. Range of shutter speed adjustment: 1/50–1/4000 s The iris value is adjusted automatically.</p> <p>In the Iris Value Indication Mode: Turning upward: The iris opening becomes larger. Turning downward: The iris opening becomes smaller. Range of iris adjustment: Closed→F16.0...F2.0→Open+0 dB...Open+18 dB The shutter speed is fixed.</p> <p>To Return to the Normal Shooting mode Reset the [AE] Dial to "AUTO".</p>

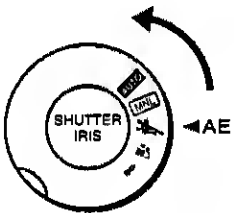


Purpose	Viewfinder
<p>How to Shoot Fast-Moving Subjects</p> <p>■ Using the Sports Mode This function makes it possible to obtain pictures with minimized blur when shooting fast-action scenes such as tennis or other types of sports.</p> <p>When scenes recorded with the Sports Mode are later played back on a VTR, still and slow motion playback with very sharp picture contours and brilliant details can be obtained.</p>	
<p>How to Make People Stand out Sharply from the Background</p> <p>■ Using the Portrait Mode In the Portrait Mode, the Iris is automatically set to its maximum opening which results in a very small depth-of-field. This causes the subject in the centre of the picture to be sharply focussed while the background is blurred.</p>	
<p>How to Shoot Dark Scenes More Brightly</p> <p>■ Using the Low Light Mode This increases the sensitivity and brightens up the picture.</p>	

Procedure

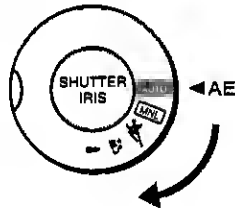
Remarks, etc.

1



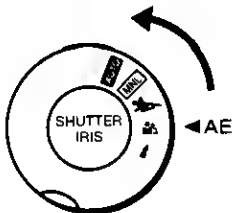
2

■ To Return to the Normal Shooting Mode



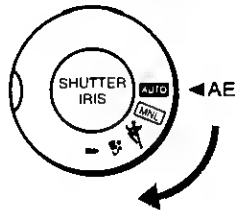
- In the Sports Mode, the shutter speed is automatically adjusted (between 1/50 s and 1/500 s) according to the brightness of the scene, so even fast movements will be captured in sharp and stable pictures.
- If the illumination of the scene is weak, the "⚡" Indication in the Viewfinder flashes. In this case, the Movie Camera is not in the "High Shutter Speed" Mode.

1



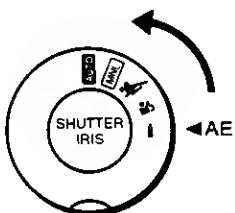
2

■ To Return to the Normal Shooting Mode



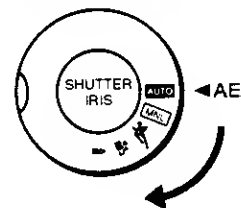
- The shutter speed is automatically adjusted according to the brightness of the subject.
- Zooming in on the subject by pushing the [W • T] Zoom Lever toward "T" increases the blurring of the background.

1

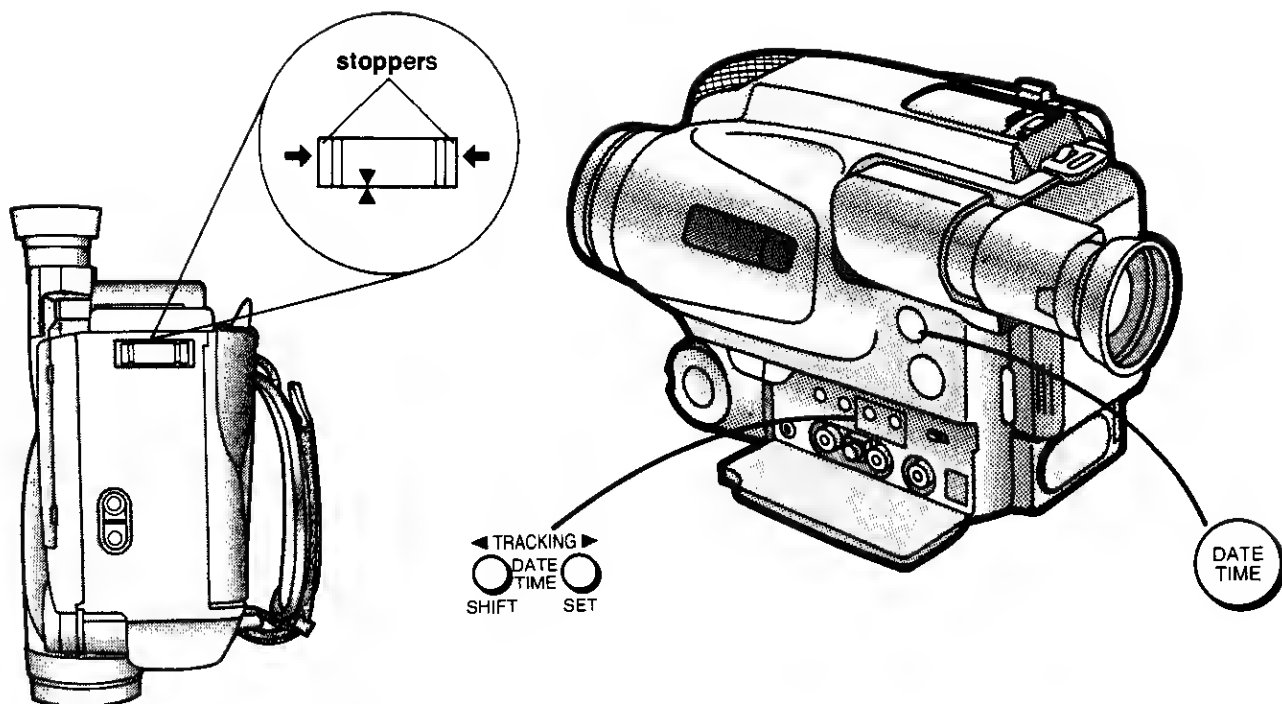


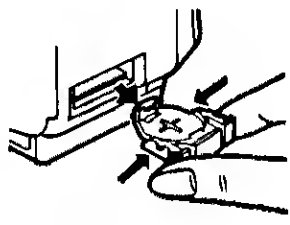
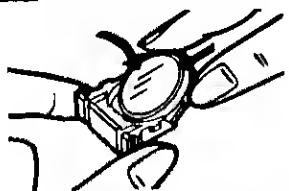



2

■ To Return to the Normal Shooting Mode



- Even if this mode is used for outdoor shooting in the daylight, the result will be almost the same as when shooting in the normal mode.



Purpose	Procedure	
<p>How to Insert the Button-Type Battery</p> <p>When the Button-Type Battery is not inserted, the " " Indication flashes in the Viewfinder. Insert the Button-Type Battery.</p> <p>• Before exchanging the battery, turn the Movie Camera off.</p>	<p>1</p>  <p>Pull out the Battery Holder while pushing the two stoppers toward each other.</p>	<p>2</p>  <p>Install the Battery with the (+) mark facing downward until it locks with a click.</p>
<p>Setting the Date and Time</p> <p>Before setting, attach the charged Battery Pack or connect the AC Adaptor to the Movie Camera and turn the Movie Camera on.</p> <p>Adjust while looking into the Viewfinder. For more details, see the example on p. 49.</p>	<p>1</p> 	<p>2</p>  <p>Keep pressed to make the "Year" portion starts to flash.</p>
<p>Inserting and Deleting the Date and Time</p> <p>The Date and Time Indications can be inserted and deleted during shooting as well as in the Shooting Pause Mode.</p>	 <p>By pressing this button repeatedly, the Date/Time Indication in the Viewfinder can be changed in the following order. Select the desired indication.</p>	

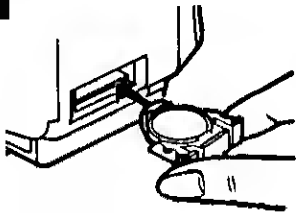
"THE LITHIUM BATTERY IS A CRITICAL COMPONENT (TYPE NUMBER CR2032 MANUFACTURED BY PANASONIC).

IT MUST NEVER BE SUBJECTED TO EXCESSIVE HEAT OR DISCHARGE. IT MUST THEREFORE ONLY BE FITTED IN EQUIPMENT DESIGNED SPECIFICALLY FOR ITS USE.

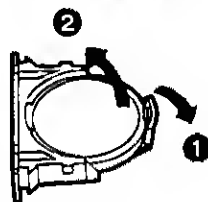
REPLACEMENT BATTERIES MUST BE OF THE SAME TYPE AND MANUFACTURER. THEY MUST BE FITTED IN THE SAME MANNER AND LOCATION AS THE ORIGINAL BATTERY, WITH THE CORRECT POLARITY CONNECTIONS OBSERVED.

DO NOT ATTEMPT TO RE-CHARGE THE OLD BATTERY OR RE-USE IT FOR ANY OTHER PURPOSE IT SHOULD BE DISPOSED OF IN WASTE PRODUCTS DESTINED FOR BURIAL RATHER THAN INCINERATION."

3



■ How to Remove the Button-Type Battery



- ① While pushing,
- ② remove.

Remarks, etc.

■ Replacing the Button-Type Battery from the Battery Holder

- The life of the battery is about one year. When the battery becomes exhausted, the "⊗" indication in the Viewfinder starts to flash. Replace the exhausted battery with a new CR2032 Battery.

■ To Change the Figure



■ To Advance to the Next Portion



Adjust by alternately pressing the [SET] and the [SHIFT] Button.

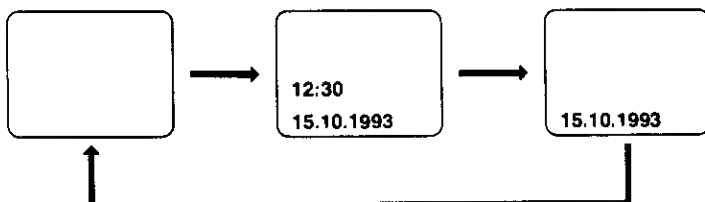
- After setting all portions of the Date and Time Indication, press the [SHIFT] Button again to start the clock.
- When the [SET] Button is kept pressed down, the figures change more quickly.
- If you make a mistake during setting, start again from the beginning.

Advanced Operations

No indication

Date and Time

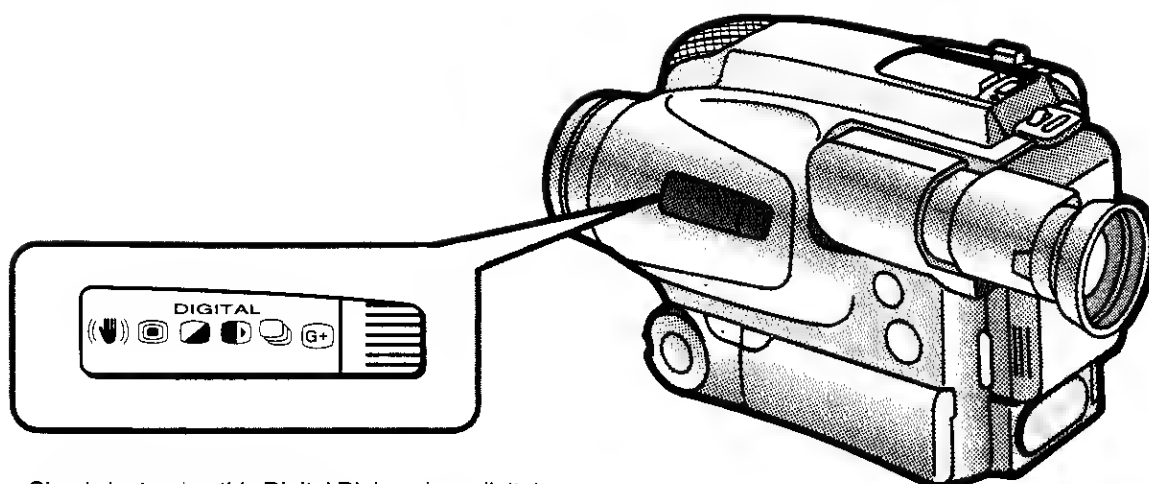
Date only



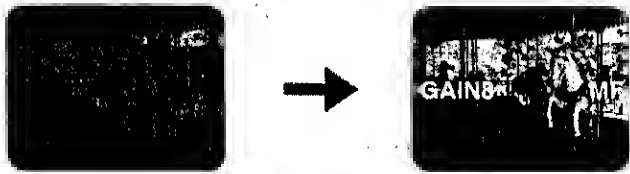
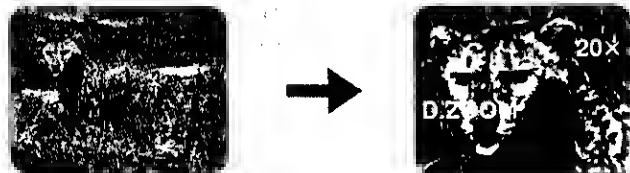

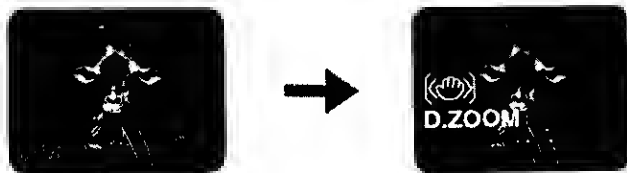
■ Displaying the Date from the Camera Information in the Viewfinder

Even if the date is not displayed in the Viewfinder during shooting, it is always recorded as part of the camera information. It can be checked in the Viewfinder during playback by pressing the [DATE/TIME] Button. In addition, the picture signal which includes the date information is output through the [VIDEO OUT] Socket (p. 35).

In this case, the date/time indication will be at the bottom right corner of the picture.



- Simply by turning this Digital Dial, various digital effects can be obtained.
To cancel the Digital Function, turn the Digital Dial to the lowermost position so that none of the 6 indications is lit.

<i>Purpose</i>	<i>Viewfinder</i>
<p>Digital Gain-up Function</p> <p>This function makes it possible to shoot dark scenes more brightly.</p>	
<p>Digital Zoom Function</p> <p>The zoom magnification range is extended to 20x.</p>	
<p>Digital Strobe Function</p> <p>This function makes it possible to continuously shoot still pictures of about 1/4 sec. duration.</p>	
<p>Digital Image Stabilizer Function</p> <p>This function compensates for possible shaking of the handheld Movie Camera.</p>	

Procedure

Remarks, etc.

1



- When using this function, some after-image distortion may occur.
- The focus must be adjusted manually since the Movie Camera is automatically switched into the Manual Focus Mode.
- The Sports Mode or the Portrait Mode will be cancelled automatically.

1



- When the "D.ZOOM" Indication is displayed in the Viewfinder, the subject can be enlarged up to 20 times.
- The zooming speed varies depending on how far the [W•T] Zoom Lever is pushed towards "W" or "T". (The further it is pushed towards either "W" or "T", the faster the zooming speed becomes.)

1

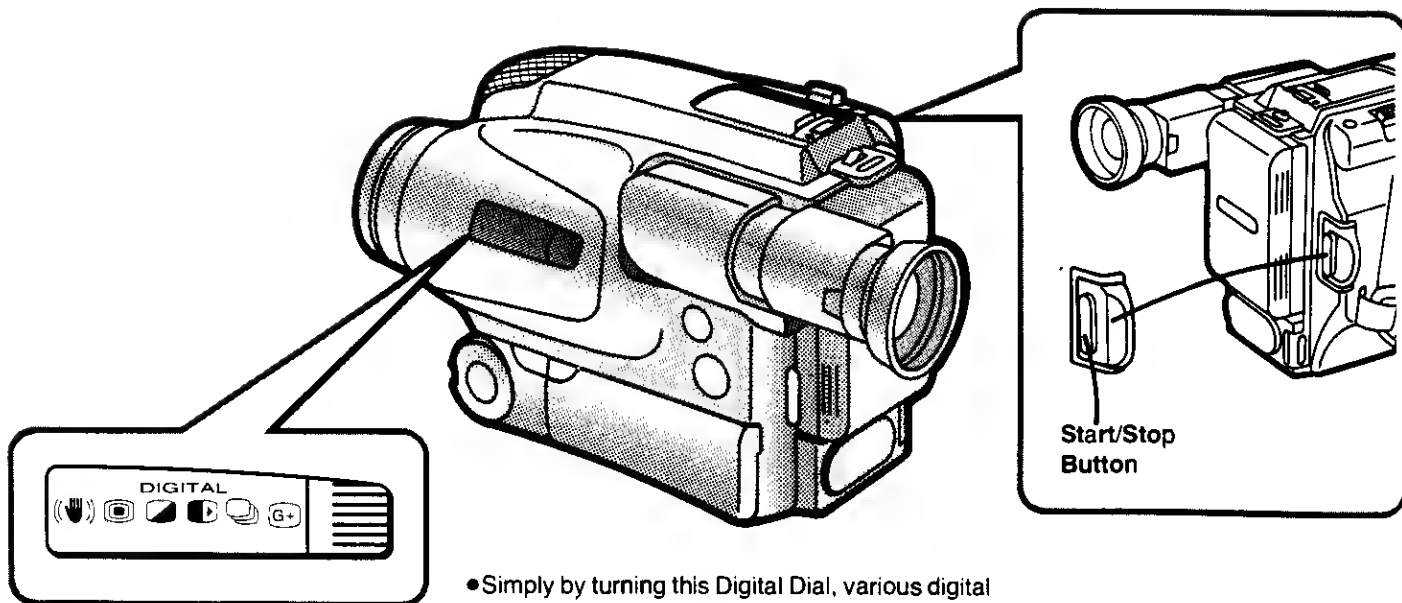


- Since the strobe pictures are recorded from the digital image memory, the picture quality may be slightly inferior to that of normally recorded pictures.
- When shooting under fluorescent lamps, the brightness of the picture may fluctuate.

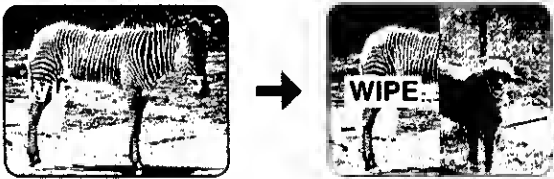

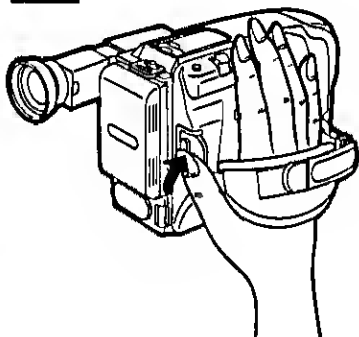
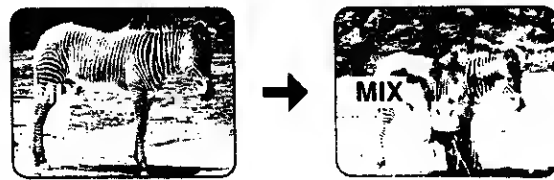

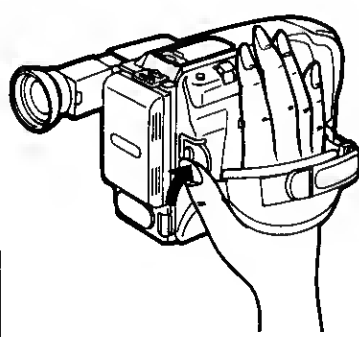
1



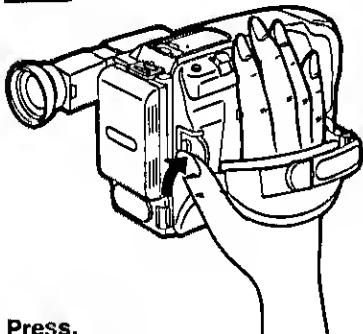
- The resolution of the picture will be slightly reduced.
- This function is especially practical for the following shooting situations:
 1. Zooming in on a distant subject.
 2. Shooting while walking.
 3. Shooting from inside a moving car.
- The "D.ZOOM" Indication appears, too.



- Simply by turning this Digital Dial, various digital effects can be obtained.
To cancel the Digital Function, turn the Digital Dial to the lowermost position so that none of the 6 indications is lit.

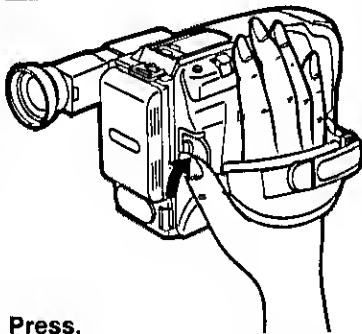
Purpose	Procedure	
<p>How to Fade Over from the Last Recorded Scene to the Next (Digital Wipe)</p> <p>This function makes it possible to achieve a smooth transition from the last recorded scene to the next scene. When starting to shoot the new scene, a still picture of the last scene appears, and it is then changed over to the moving picture of the new scene with Digital Wipe (like opening a curtain).</p> 	<p>1</p>  <p>The "WIPE" Indication appears in the Viewfinder.</p>	<p>2</p>  <p>Press. The Shooting starts.</p>
<p>How to Fade Over from the Last Recorded Scene to the Next (Digital Mix)</p> <p>This function makes it possible to achieve a smooth transition from the last recorded scene to the next scene. When starting to shoot the new scene, a still picture of the last recorded scene appears, and it is then gradually replaced by the moving picture of the new scene.</p> 	<p>1</p>  <p>The "MIX" Indication appears in the Viewfinder.</p>	<p>2</p>  <p>Press. The Shooting starts.</p>

3



Press.
The shooting stops.
The "WIPE" indication becomes white.
The last picture of the last recorded scene is kept in the memory.

4

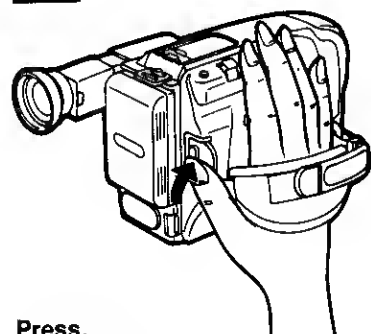


Press.
The picture (from the memory) appears as still picture. It is then gradually replaced from right to left by the moving picture of the new scene.

Remarks, etc.

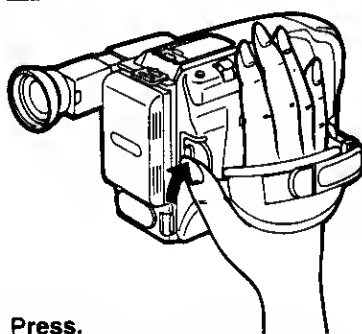
- Since the still picture is recorded from the digital image memory, the picture quality becomes slightly inferior to that of normally recorded pictures.
- Performing Recording Review or pressing [VTR/CAMERA] Button does not erase the picture in the digital image memory.
- The still picture from the memory will be lost if the Movie Camera is turned off or if the Digital Mode is turned off or changed to a mode other than MIX or WIPE.

3



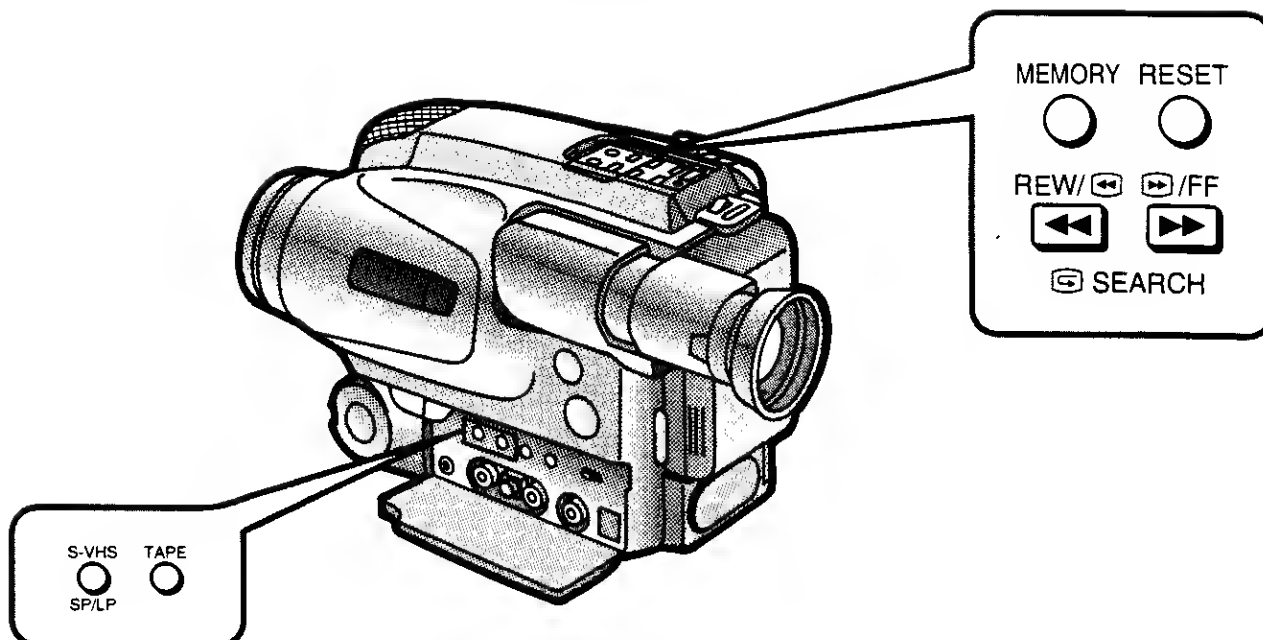
Press.
The shooting stops.
The "MIX" indication becomes white.
The last picture of the last recorded scene is kept in the memory.

4



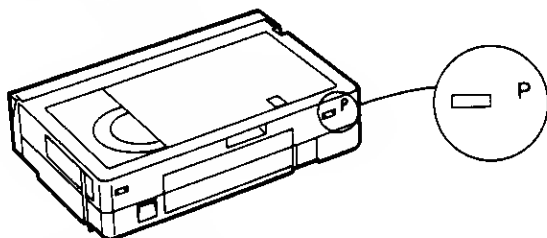
Press.
The picture (from the memory) appears as still picture. It is then gradually faded over to the moving picture of the new scene.

- Since the still picture is recorded from the digital image memory, the picture quality becomes slightly inferior to that of normally recorded pictures.
- Performing Recording Review or pressing [VTR/CAMERA] Button does not erase the picture in the digital image memory.
- The still picture from the memory will be lost if the Movie Camera is turned off or if the Digital Mode is turned off or changed to a mode other than MIX or WIPE.



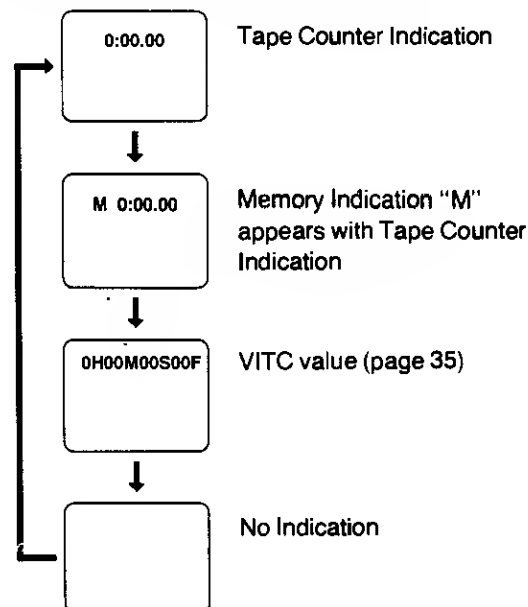
Purpose	Viewfinder	Procedure
How to Use the Tape Counter Indication <p>The Tape Counter in the Viewfinder shows the elapsed recording or playback time in hours, minutes and seconds.</p> <p>Resetting the Tape Counter to "0:00.00" by pressing the [RESET] Button before starting to shoot makes it easy to keep track of the elapsed recording time.</p>		1 <p>■ To Reset the Tape Counter:</p>
How to Use the Memory Function <p>When the Tape Counter is reset to "0:00.00" at the beginning of the desired scene and the Memory Indication "M" is turned on, the tape will stop automatically at the "0:00.00" position when rewinding or fast-forwarding it.</p>	<p>Means: Memory</p>	1 <p>■ To Make the "M" Indication Appear:</p>
How to Confirm the Remaining Tape Time <p>During recording or playback, the Remaining Tape Time is automatically displayed in the Viewfinder.</p>	<p>Means: Remaining</p>	1 <p>Select the Tape Length Indication (" 30" or " 45") that matches the Video Cassette being used.</p>

Video Cassette



When using a video cassette carrying the "P" mark or an S-VHS-C video cassette, the Remaining Tape Counter Indication may not be very precise.

At every press of the [MEMORY] Button, the Counter Indication will change as follows:



Remarks, etc.

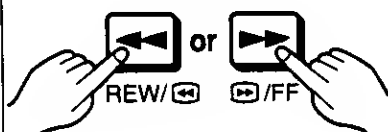
- The Tape Counter Indication does not change during playback of tape on which no recording has been made.
- Taking out the Cassette or removing the Battery Pack automatically resets the Tape Counter Indication to "0:00.00".
- When the tape is rewound further than the tape counter position "0:00.00", the minus sign "-" appears in front of the Tape Counter Indication.
- It is not possible to reset the VITC Counter with the [RESET] Button. (p. 35)

2

■ To Reset the Tape Counter:



3



■ To Check the Tape Length of the Video Cassette Being Used while the Remaining Tape Time Is Displayed:

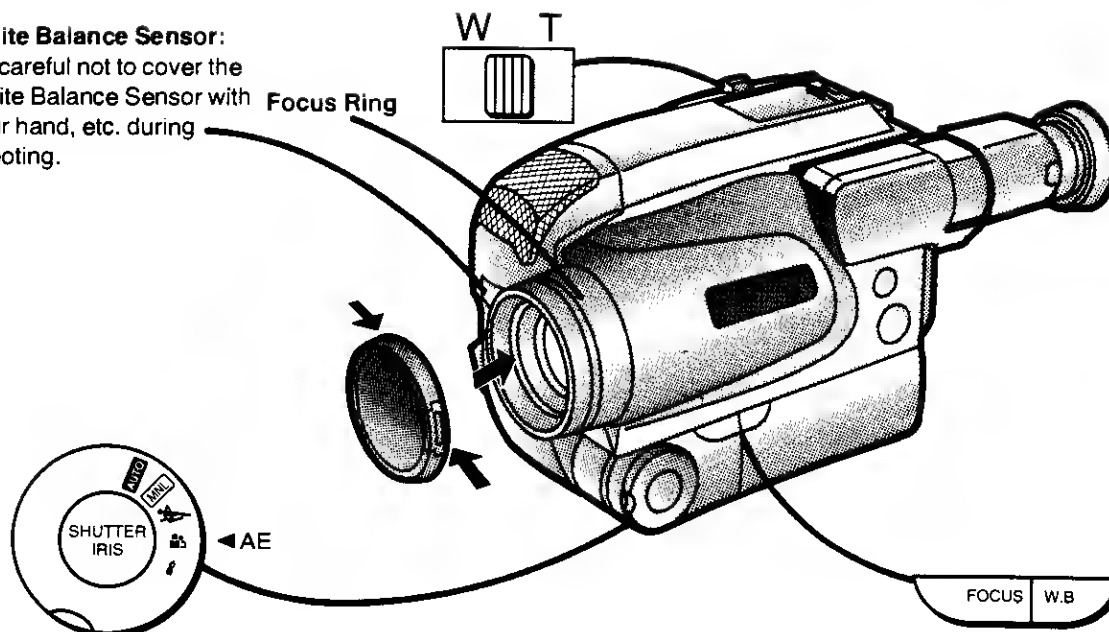


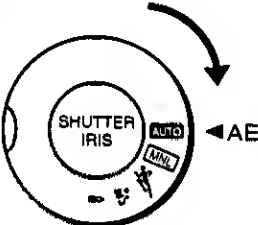
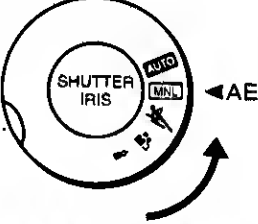
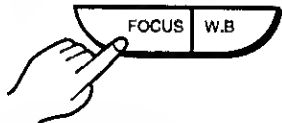
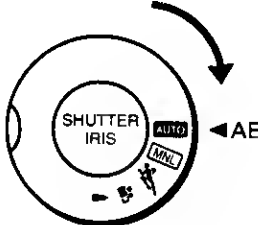
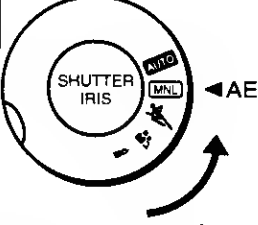
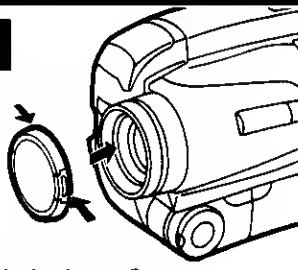
The Tape Length Indication " 30" or " 45" is displayed for approx. 2 seconds, and then the Remaining Tape Time Indication will again appear instead of it.

- While the Movie Camera calculates the Remaining Tape Time, the "R" Indication flashes in the Viewfinder. "R" means Remaining.
- When the Remaining Tape Time becomes less than 2 minutes, the Indication "R" and the Remaining Tape Time start to flash.

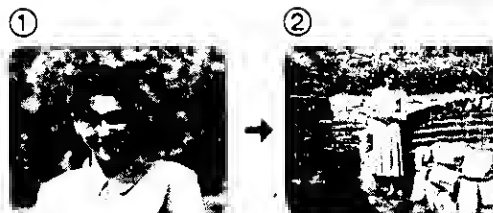
White Balance Sensor:

Be careful not to cover the White Balance Sensor with your hand, etc. during shooting.

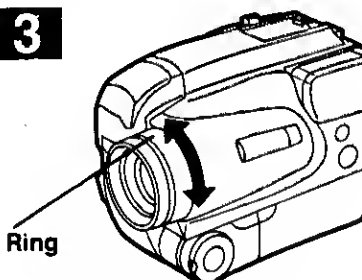
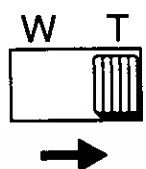
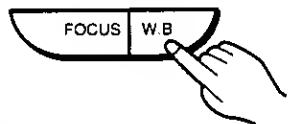


Purpose	Procedure	
<p>How to Shoot with the Auto Focus Mode</p> <p>When the [AE] Dial is set to "AUTO", the Movie Camera will automatically focus precisely on almost any subject located in the centre of the Viewfinder.</p>	<p>1</p> 	
<p>How to Shoot with the Manual Focus Mode</p>	<p>1</p>  <p>Set to a position other than "AUTO".</p>	<p>2</p>  <p>The "MF" Indication appears in the Viewfinder.</p>
<p>How to Shoot with Automatic White Balance Adjustment</p> <p>When the [AE] Dial is set to "AUTO", it is possible to shoot pictures with natural colours under almost any shooting condition.</p>	<p>1</p> 	
<p>How to Shoot with Manual White Balance Adjustment</p> <p>If there are several light sources or if the illumination is weak: Instead of the operation in step 2 on the right, remove the Lens Cap and point the Movie Camera at a pure white subject.</p>	<p>1</p>  <p>Set to a position other than "AUTO".</p>	<p>2</p>  <p>Attach the Lens Cap.</p>

Hints for Manual Focus Adjustment



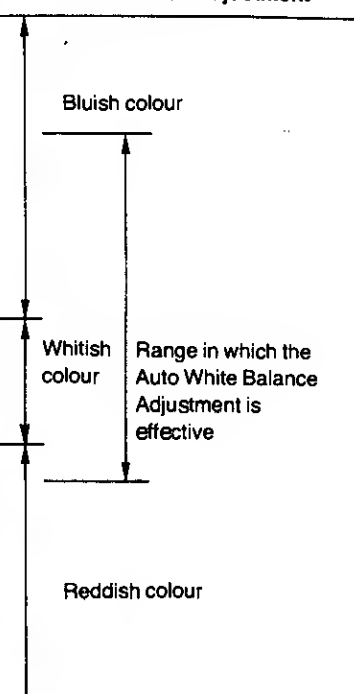










- ① Be sure to adjust the focus after zooming in on the subject.
- ② Adjusting the focus with the lens zoomed in on the subject assures precisely focussed pictures even when subsequently zooming back.
 - If the focus is adjusted with the lens in the wide-angle setting, the subject may go out of focus when zooming in on the subject.

		Remarks, etc.
		<ul style="list-style-type: none"> • When the [AE] Dial is set to a position other than "AUTO", and the "MF" Indication is shown in the Viewfinder, press the [FOCUS] Button to make the "MF" Indication disappear. • In shooting conditions such as explained on p. 50, the Auto Focus Mode cannot provide precise focussing. Adjust with the Manual Focus Mode instead.
3 		■ To Cancel the Manual Focus Mode Press the [FOCUS] Button to make the "MF" Indication disappear. Or reset the [AE] Dial to "AUTO".
		<ul style="list-style-type: none"> • When the [AE] Dial is set to a position other than "AUTO" and the "WB" Indication is shown in the Viewfinder, press the [W.B] Button to make this indication disappear. • In shooting conditions such as explained on p. 50, the Auto White Balance Adjustment Mode cannot provide natural colour rendition. Adjust with the Manual White Balance Mode instead.
3  <p>Keep pushed until the Viewfinder becomes completely white.</p>	4  <p>Press for more than 1 second.</p>	<ul style="list-style-type: none"> • When the Manual White Balance Adjustment is finished, the "WB" Indication remains lit in the Viewfinder. ■ To Cancel the Manual White Balance Mode Press the [W.B] Button one time. Or reset the [AE] Dial to "AUTO".

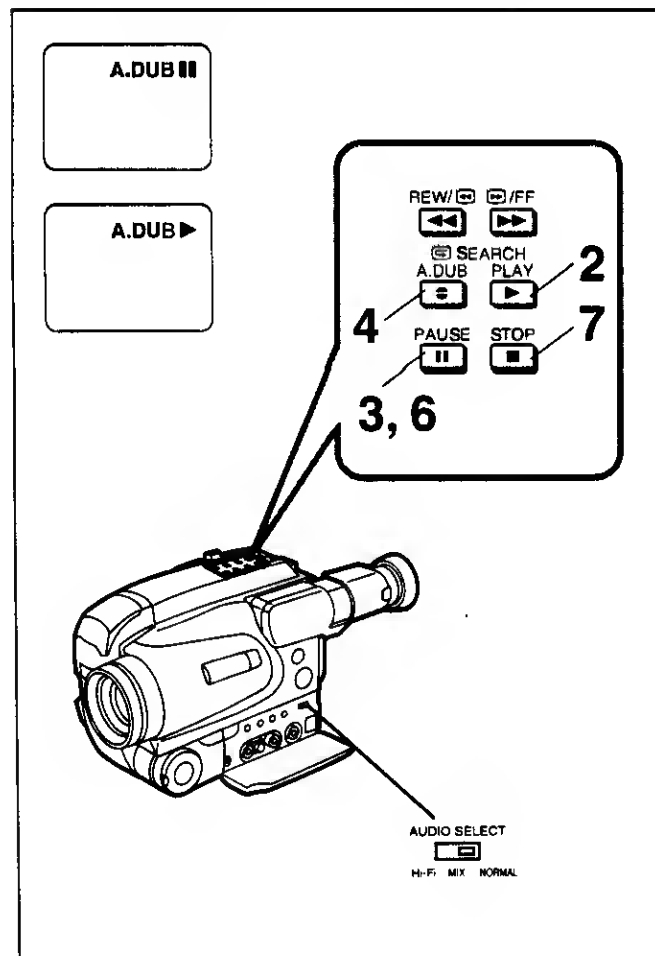
Colour Temperature and White Balance

The colour temperature of the light source is measured in Kelvin. The higher the Kelvin value is, the more bluish is the light; the lower the value, the more reddish is the light. This is not directly related to the brightness.

The table below shows the relationship between natural light, artificial light and colour temperature.

Natural light	Colour Temperature		Artificial Light	
•Blue sky	10,000°K			
•Slightly overcast sky 	7,000°K~8,000°K	8,000°K~9,000°K	•TV screen 	
•Cloudy sky (Rain) 	6,000°K			
•Sunlight 	5,000°K			
		4,800°K	•Fluorescent lamp (white) 	
•1~2 hours after sunrise or before sunset	3,000°K~4,200°K	2,500°K~3,500°K	•Flourescent lamp (not white) or studio lamp 	
•Sunrise or sunset 	2,000°K~2,500°K	2,000°K~2,800°K	•Halogen light bulb 	
		2,000°K~2,500°K	•Tungsten lamp 	
		1,500°K~2,000°K	•Candle-light 	

How to Use the Audio Dubbing Function



Audio Dubbing can be performed by using the stereo microphone or an external microphone.

- 1 Insert the recorded cassette with the record prevention tab intact.
- 2 Press the [PLAY] Button in the VTR mode. Play back the tape to locate the point where you want to start the Audio Dubbing.
- 3 Press the [PAUSE] Button.
- 4 Press the [A.DUB] Button. The "A.DUB III" Indication appears in the Viewfinder.
- 5 Operate the audio source unit.
- 6 Press the [PAUSE] Button again.
 - The Audio Dubbing starts.
 - The [A.DUB ►] Indication appears in the Viewfinder.
- 7 Press the [STOP] Button. The Audio Dubbing stops.

■ When playing back a cassette tape on which audio dubbing has been performed...

Use the Audio Selector Switch to select the sound to be played back.

Hi-Fi: The original sound (sound before performing audio dubbing) alone can be heard.

MIX: The original and the dubbed sound can be heard mixed together.

NORMAL: The Dubbed sound alone can be heard.

How to Use the VITC Function

■ VITC

As an address (individual number) is recorded for each frame, it is possible to find the accurate position of any desired scene or picture on a tape by checking the address during playback. This address is called "Time Code".

Since the VITC signals (Vertical Interval Time Code) are recorded together with the picture signals, (however, in a part that is not visible on the TV screen), they will not be cancelled even when the video cassette is taken out from the Movie Camera or the Movie Camera is switched off. This makes it possible to check the precise position of any desired picture at any time.

Notes:

1. The number indicated in the Viewfinder (Linear Counter or VITC Counter) is output through the [NEW EDIT E] Socket.
2. Do not switch between the "Linear Counter" and the "VITC" counter during editing with an Editing Controller.
3. To ensure that the VITC signal is recorded on a tape without interruption when starting to shoot after taking out the video cassette from the Movie Camera, after performing FF or REW, or after starting to shoot midway on a video cassette, be sure to play back the last part of the previous recording.
4. As the VITC Counter Indication displayed during FF or REW is only a rough approximation of the actual VITC value, it cannot be used for checking the precise VITC value. (When performing FF or REW without having performed any playback, the VITC Counter Indication remains at zero.)
5. When editing with the Editing Controller VW-EC10 (optional), set the User Code to the "off" mode as explained in paragraph '3.6.2 Editing with "foreign" timecode' of its Operation Manual.
6. To provide a blank leader portion (unrecorded tape) at the beginning of each video cassette, shoot for at least 20 seconds with the Lens Cap attached to the Lens.
7. Each time you start shooting, small jumps may appear in the time code. Therefore, get into the habit of always starting the shooting approx. 5 seconds before the action you wish to record actually starts.

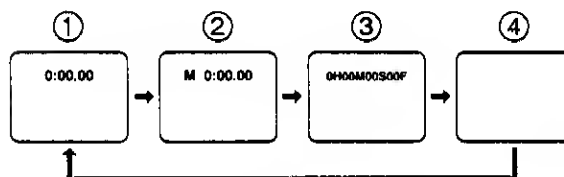
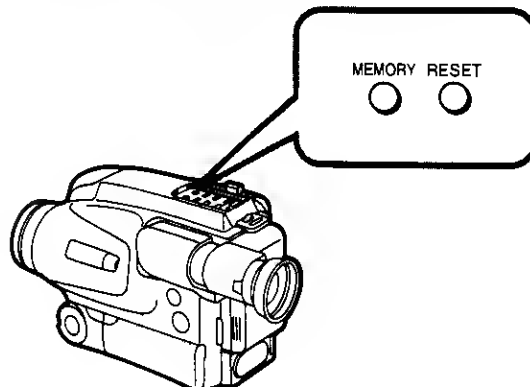
■ Notes only for Performing VITC Editing with an Editing Controller

- During VITC editing with certain editing controllers, an error message may appear and prevent further editing. In this case, move the editing point forwards or backwards approx. 1 second and try to start editing again.
- To ensure precise editing when using the Editing Controller VW-EC1E (Panasonic) or 9710-1 (METZ), first put the Movie Camera into the playback mode and connect it to the Editing Controller and then start the editing. (When subsequently turning the Movie Camera off and on again, first put the Movie Camera into the playback mode again and reconnect it to the Editing Controller.)

1 Recording of VITC Signals

During shooting, VITC signals are also recorded automatically.

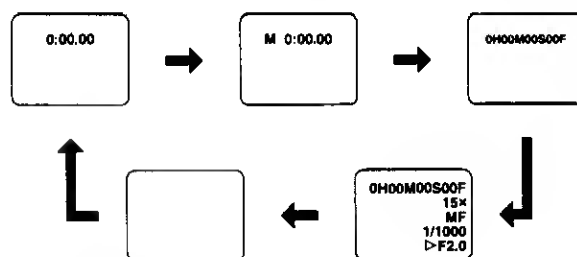
- When shooting is started from an unrecorded part of a video tape, the VITC number begins from 0H00M00S00F (Hours, Minutes, Seconds, Frames). (1 Frame = 1/25 s)
- When shooting is started from the end of the previously recorded part of a video tape, the VITC number continues from the previously recorded VITC number.



To check the VITC number, press the [MEMORY] Button to make the VITC Counter Indication appear in the Viewfinder.

2 Playback of VITC Signals

Checking the VITC number and the camera information is possible by repeatedly pressing the [MEMORY] Button during playback in the VTR mode.



■ Camera Information

The camera information (zoom magnification, manual focus, shutter speed, iris setting, etc.) is automatically recorded together with the VITC signals. This information can be checked in the Viewfinder during playback. The date and time are also automatically recorded as part of the camera information. They can be checked in the Viewfinder during playback by pressing the [DATE/TIME] Button. (p. 24)

1 How to Use the AC Adaptor as Power Supply Unit

Notes:

1. When the AC Adaptor is used to supply the Movie Camera with power, remove the Battery Pack from the AC Adaptor as it cannot charge the Battery Pack and provide power simultaneously.
2. Do not use the AC Adaptor for any purposes other than supplying the unit with power and charging the Battery Pack.
3. When listening to a radio etc. while the AC Adaptor is in operation, the radio reception may be distorted. In this case, move the radio etc. farther away from the AC Adaptor.
4. When not using the AC Adaptor, unplug its mains cable. When unplugging the mains cable, pull it by the plug, not by the cable.

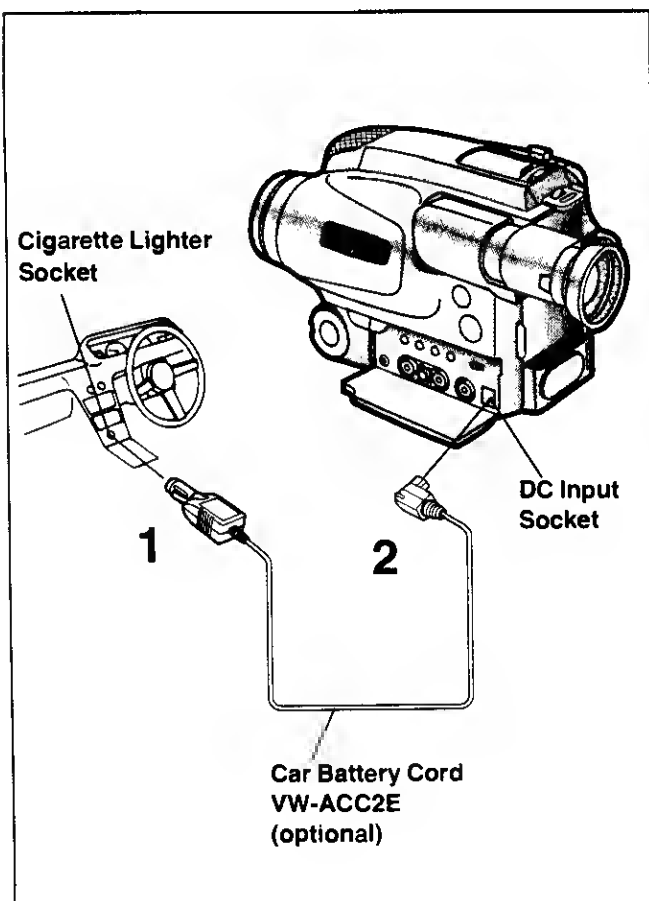
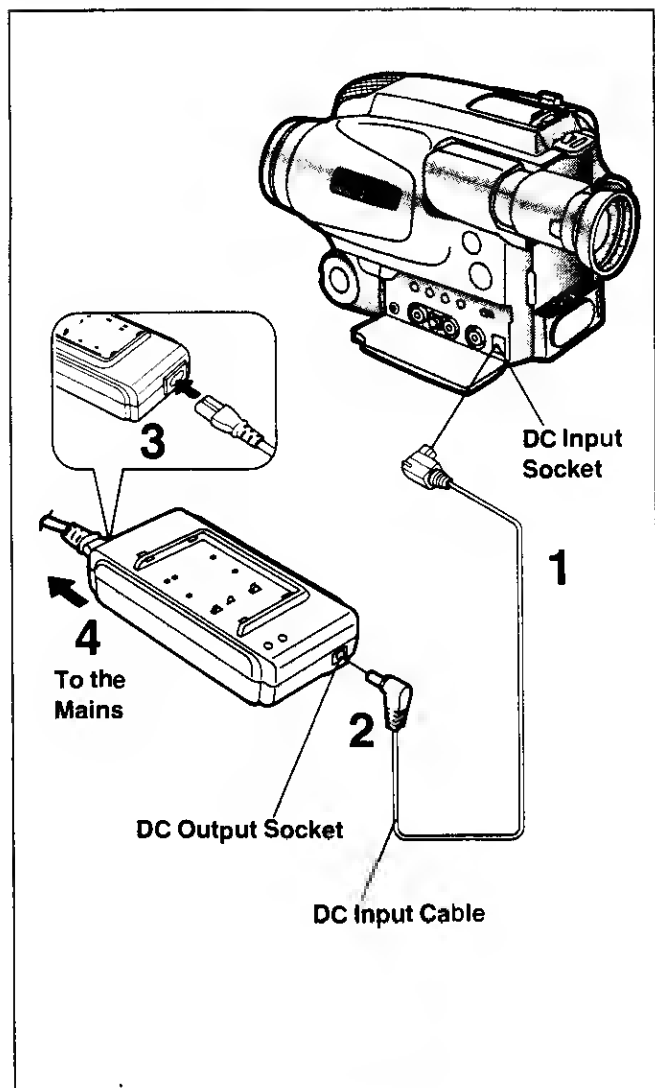
- 1 Connect the DC Input Cable to the [DC IN] Socket on the Movie Camera.
- 2 Connect the other end of the cable to the [DC OUT] Socket on the AC Adaptor.
- 3 Connect the AC Mains Cable to the AC Adaptor.
- 4 Connect the other end of the AC Mains Cable to the Mains Wall Socket.

2 How to Use the Car Battery Cord (Optional)

Notes:

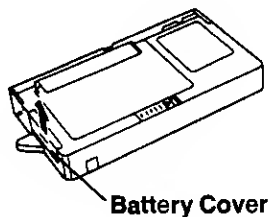
1. The Car Battery Cord can only be used with 12 V DC negative-grounded vehicles.
2. Do not start the car engine while the Movie Camera is being powered by the car battery.
3. If the voltage drops suddenly e.g. because the car air-conditioner is turned on, the Movie Camera is automatically turned off to protect it. Wait about 10 seconds before turning it on again.
4. Some cars, RVs and campervans use 24 V. Please confirm with vendor that your vehicle uses 12 V before using the Car Battery Cord. If used on 24 V, damage may occur and is not covered by warranty.

- 1 Start the engine and then plug the Car Battery Cord into the Cigarette Lighter Socket.
- 2 Connect the other end of the cord to the DC Input Socket on the Movie Camera.

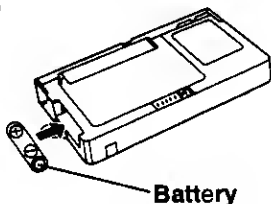


How to Play Back on a VTR

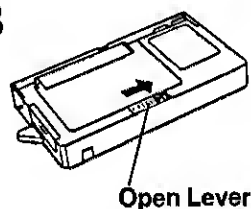
1



2



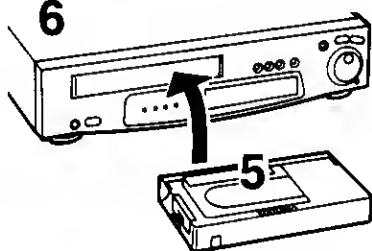
3



4



6



■ Using the Supplied Cassette Adaptor

Notes:

1. For optimum picture quality, it may be necessary to adjust the tracking control on the VTR.
2. Never insert the empty Cassette Adaptor (without a video cassette) into a VTR.
3. Do not insert the Cassette Adaptor into a VTR and take it out again without running the tape, because this could loosen the tape.
4. When loading the video cassette into the Cassette Adaptor, do not touch the tape directly.
5. After use take the video cassette out from the Cassette Adaptor.

1

Push the Battery Cover upward and remove it.

2

Insert the supplied Battery and replace the Battery Cover.

3

Slide the Open Lever.

4

Insert the recorded Compact Video Cassette and close the Top Cover.

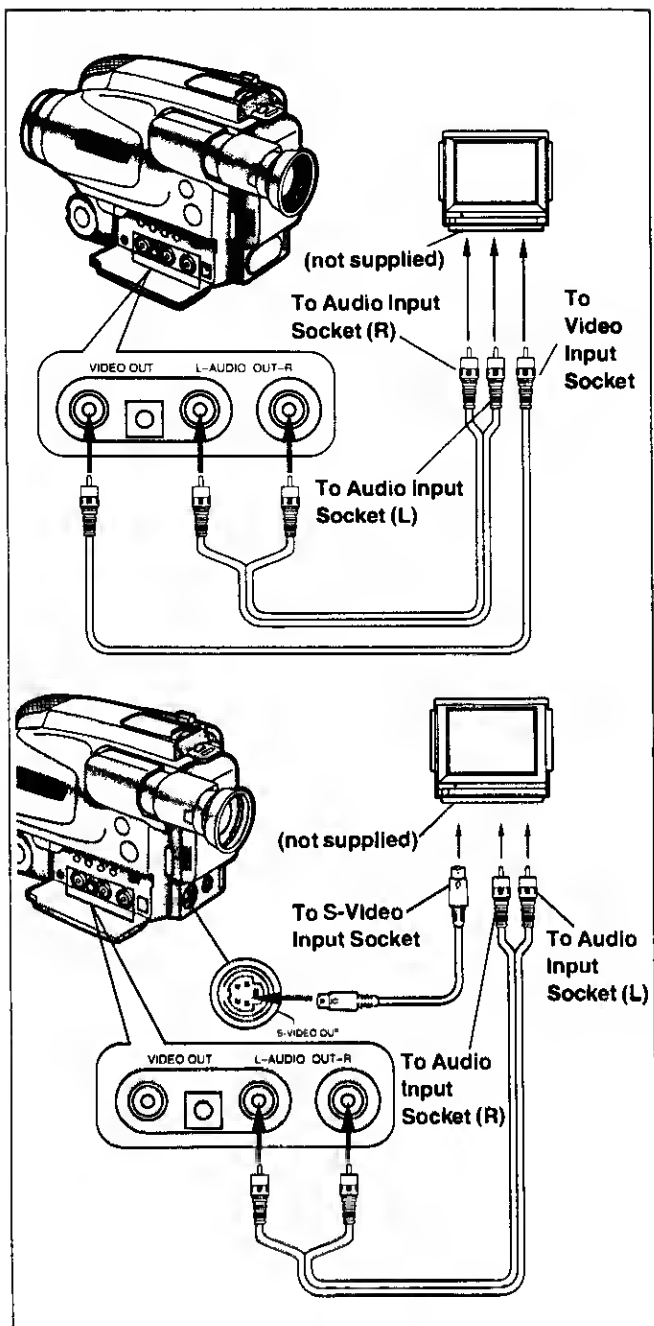
5

Insert the Cassette Adaptor Into your VTR.

6

Start the playback operation of the VTR.

How to Play Back via a TV Set



There are three ways to play back via a TV set:

- 1 Playback via a TV set with AV Input Socket.
- 2 Playback via a TV set with S-Video Input Socket.

Select them according to the TV set being used.

Notes:

1. If your TV set is not equipped with an AV Input Socket, the RF Adaptor (optional) is necessary. For its connection, read the operating instructions of the RF Adaptor.
2. Do not bend the cable excessively.
3. Do not expose the cable to high temperature or chemicals.

1 Playback via a TV Set with AV Input Socket (Using the Supplied Audio/Video Cable)

Turn off the Movie Camera and the TV set.

Connect the Movie Camera to the TV Set.

■ **Activate the Playback Operation**
(See p. 14.)

2 Playback via a TV Set with S-Video Input Socket (Using the Supplied S-Video Cable)

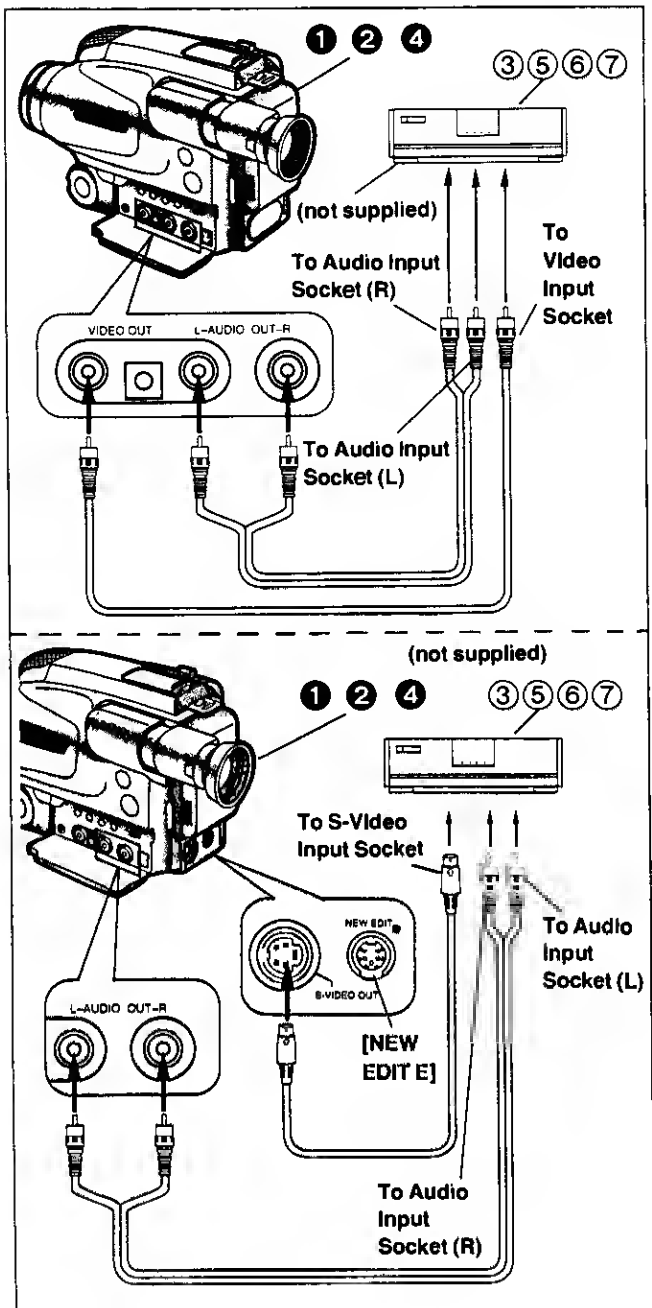
Turn off the Movie Camera and the TV set.

Connect the Movie Camera to the TV set.

■ **Activate the Playback Operation**
(See p. 14.)

By using the supplied Cassette Adaptor, the recorded video cassette can be played back on a VHS VTR and watched on a TV set. For more details, see p. 37.

How to Edit a Previously Recorded Tape



Connect the Movie Camera to the VTR using the supplied Audio/Video Cable or S-Video Cable.

■ Operations

Playback Unit (Movie Camera): ① ② ④

Recording Unit (VTR): ③ ⑤ ⑥ ⑦

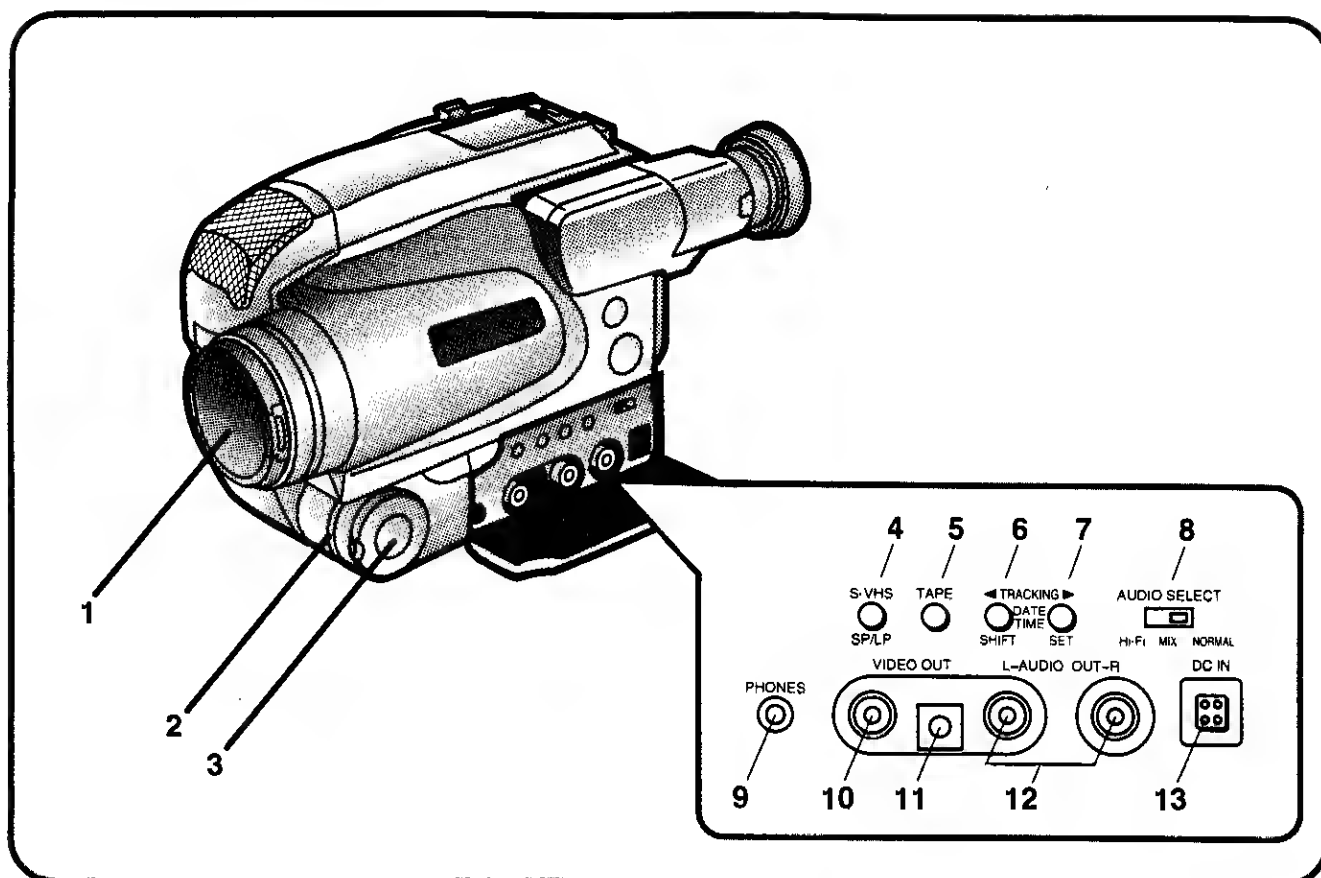
- ① Insert the recorded video cassette for playback into the Movie Camera.
Find the point on the tape where you want to cut and note the tape counter position.
- ② Rewind the tape and find the point where the dubbing is to start.
- ③ Insert the video cassette for recording into the VTR and put it in the Recording Pause Mode. Also read the Operating Instructions of the VTR.
The picture quality deteriorates slightly in the dubbing process, however, this can be minimized by selecting the standard recording speed (SP Mode) on the VTR.
- ④ Start the playback.
- ⑤ Press the Pause/Still Button to start recording.
- ⑥ Press the Pause/Still Button at the point where the dubbing is to end.
The VTR is now in the recording pause mode.
- ⑦ When the next scene which you want to record appears, press the Pause/Still Button one more time.

■ Edit Socket [NEW EDIT E]

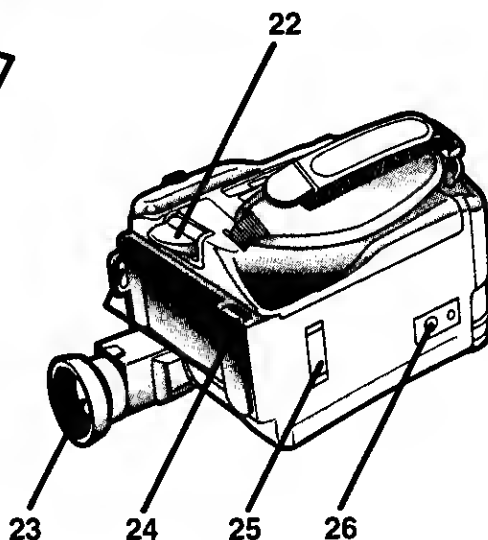
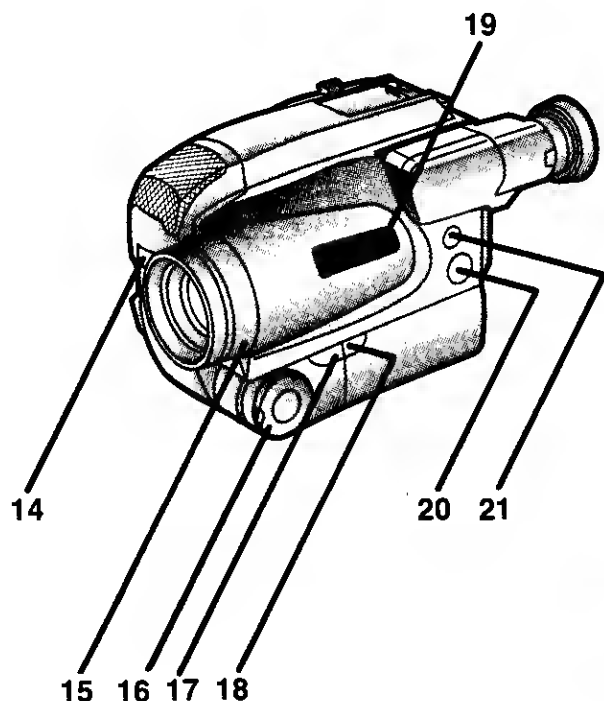
By connecting an Editing Controller (optional) to this socket as well as to a VTR equipped with Edit Socket, highly precise and speedy editing becomes possible.

Controls and Functions

For more details, see the pages indicated in brackets.



- 1 Lens Cap (p. 8)**
This Cap protects the Lens when the Movie Camera is not in use.
- 2 [SHUTTER/IRIS] Control (p. 21)**
- 3 [SHUTTER/IRIS] Button (p. 21)**
- 4 [S-VHS • SP/LP] Button (p. 10)**
Use this Button to select the desired recording speed mode (SP/LP) for shooting.
- 5 [TAPE] Button (p. 30)**
To make sure that the Remaining Tape Time Indication in the Viewfinder is correct, press this button to select the indication that matches the tape length of the Video Cassette being used by this button.
- 6 [DATE/TIME/SHIFT • TRACKING ◀] Button (p. 15, 24)**
Press this Button to adjust the tracking if the playback picture contains noise bars, or to advance to the next item during the setting of the date and time.
- 7 [DATE/TIME/SET • TRACKING ▶] Button (p. 15, 24)**
Press this Button to adjust the tracking if the playback picture contains noise bars, or to set the correct date and time.
- 8 [AUDIO SELECT] Switch (p. 34)**
- 9 [PHONES] Socket (p. 14)**
- 10 [VIDEO OUT] Socket (p. 38, 39)**
 - To play back via a TV set, connect this socket via the Audio/Video Cable to the AV Input Socket of the TV Set.
 - To edit from the Movie Camera onto a Video Tape Recorder, connect this Socket via the Audio/Video Cable to the AV Input Socket of the Video Tape Recorder.
- 11 [RF DC OUT] Socket**
 - To playback via a TV Set without AV Input Socket, connect this Socket to the RF IN Socket of the TV Set using an RF Adaptor (optional).
- 12 [AUDIO OUT] Socket (p. 38, 39)**
 - To edit from the Movie Camera onto a Video Tape Recorder, connect this Socket via the Audio/Video Cable to the AV Input Socket of the Video Tape Recorder.
 - To playback via a TV Set, connect this Socket via the Audio/Video Cable to the AV Input Socket of the TV Set.
- 13 [DC IN] Socket (p. 36)**
When using the supplied AC Adaptor or the Car Battery Cord/VW-ACC2E (optional), connect it to this DC Input Socket.



14 White Balance Sensor (p. 32)

15 Focus Ring (p. 32)

After selecting the manual focus mode with the [FOCUS] Button, adjust the focus to the desired subject by turning this ring.

16 [AE] Dial (p. 23, 32)

Use this dial to select the following modes:

- Auto Mode
- Manual Mode
- Sports Mode
- Portrait Mode
- Low Light Mode

17 [FOCUS] Button (p. 32)

Press this Button to be able to manually adjust the focus.

18 [W.B] Button (p. 33)

Press this Button to shoot pictures with natural colours.

19 Digital Dial (p. 26, 28)

Turn this dial to select the desired digital function.

20 [FADE] Button (p. 20)

Press this Button to gradually fade in or fade out a scene.

21 [DATE/TIME] Button (p. 24)

Press this Button to record the date and time during shooting.

22 [OPERATE] Switch (p. 10)

Use this Switch to turn the Movie Camera on or off.

23 Viewfinder (p. 8)

While shooting, look into the Viewfinder to confirm the shooting conditions and the alarm and warning indications.

24 Shoulder Strap Holders (p. 8)

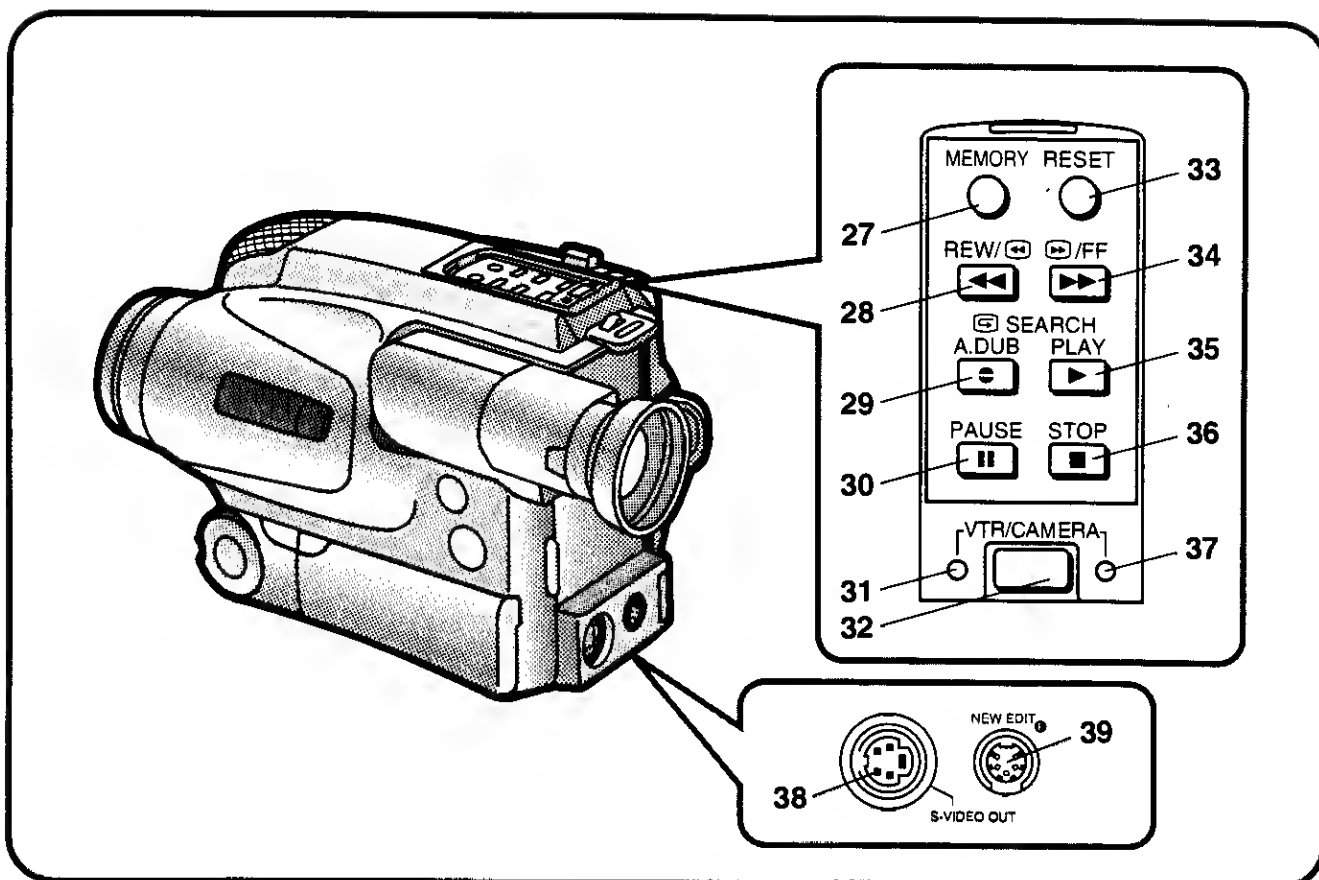
These Holders are for attaching the Shoulder Strap.

25 Button-Type Battery Compartment (p. 24)

This Compartment holds the supplied Button-Type Battery (CR 2032).

26 Tripod Receptacle

Attach a Tripod (optional) to the Receptacle.



27 [MEMORY] Button (p. 30)

Press this Button to change the Counter Indication.

28 [REW/FF] Button (p. 12, 14, 31)

Press this Button:

- To confirm that the recording is okay
- To play back at high speed in reverse direction (Review)
- To rewind the tape
- To search for a previously recorded scene (Camera Search)

29 [A.DUB] Button (p. 34)

Press this button to add new sound on a recorded tape with the Audio Dubbing Function.

30 [PAUSE] Button (p. 15)

Press this Button during playback to play back a still picture.

31 "VTR" Indication Lamp (p. 14)

32 [VTR/CAMERA] Button (p. 14)

Press this Button to select the following modes:

- "VTR" Mode ("VTR" Indication Lamp is lit.)
- "CAMERA" Mode ("CAMERA" Indication Lamp is lit.)

33 [RESET] Button (p. 31)

Press this Button to reset the Tape Counter to "0:00.00".

34 [FF] Button (p. 13, 14, 31)

Press this Button:

- To play back at high speed in forward direction (Cue)
- To wind the tape forward
- To search for a previously recorded scene (Camera Search)

35 [PLAY] Button (p. 15)

Press this Button to start the playback.

36 [STOP] Button (p. 14)

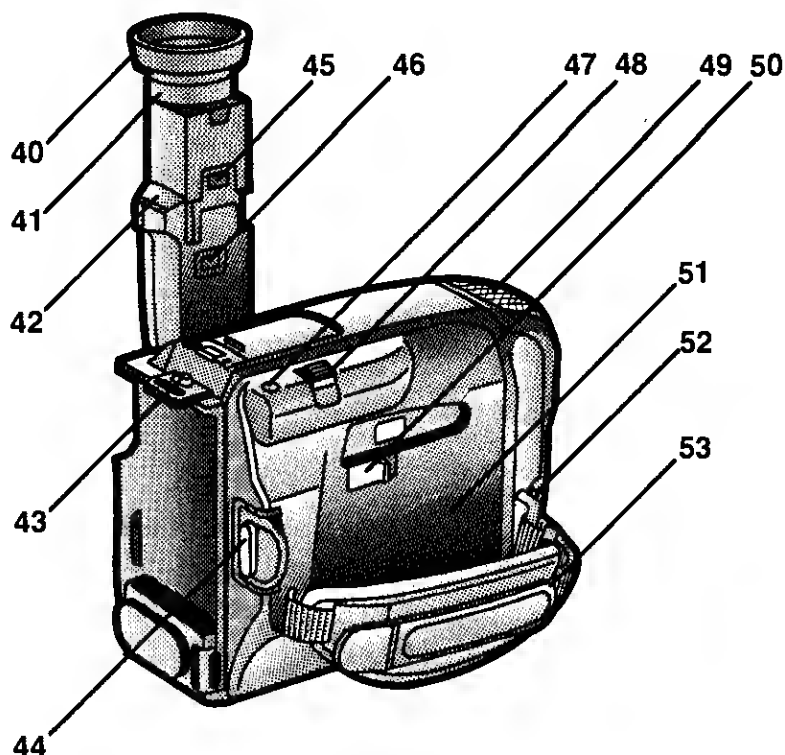
Press this Button to stop the playback.

37 "CAMERA" Indication Lamp (p. 10)

38 [S-VIDEO OUT] Socket (p. 38, 39)

39 [NEW EDIT E] Socket (p. 39)

Connect an Editing Controller/VW-EC1E or VW-EC310E (optional) to this Socket for editing.



40 Eyecup (p. 16)

To clean the Viewfinder, take off this Eyecup.

41 Eyepiece Corrector Ring (p. 9)

Turn this Ring until the indications in the Viewfinder become clearly visible.

42 Eye Sensor (p. 11)

43 Battery Pack Eject Lever (p. 7)

Use this lever to remove the Battery Pack.

44 Start/Stop Button (p. 10)

Press this Button to start shooting and press it again to change the Movie Camera back to the shooting pause mode.

45 Eyepiece Release Button (p. 16)

46 [POWER SAVE] Switch (p. 10)

47 [SNAPSHOT REC] Button (p. 19)

48 [W • T] Zoom Lever (p. 19)

Push this lever to make a subject appear larger or smaller in the picture.

49 Microphone

50 [EJECT] Lever (p. 6)

Slide this lever to eject the Video Cassette.

51 Cassette Compartment (p. 7)

This Compartment holds the Compact Video Cassette (**SVHS** or **VHS**).

52 [MIC] Socket

If you want to use an external microphone, connect it to this socket (in this case, the built-in microphone will be deactivated).




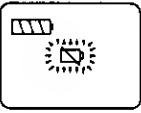




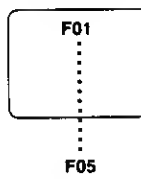
53 Grip Belt (p. 8)

This Grip Belt makes holding the Movie Camera safe and comfortable.






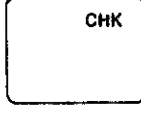
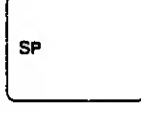
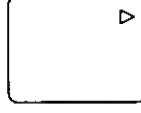

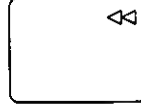

Quick Reference Guide to the Indications in the Viewfinder

The following indications are displayed in the Viewfinder to inform you about the condition of the Movie Camera.

1 Warning/Alarm Indications

Viewfinder	Condition
	Condensation (p. 48) Condensation has formed inside the Movie Camera. Wait until the "U 10/  " Indication disappears.
	Video Head Clogging (p. 48) The video heads are dirty.
	The Remaining Battery Power (p. 7) The 4 segments of the Battery Pack Indication begin to disappear one after another as the power of the Battery Pack weakens. When only the last segment remains, the "  " Indication starts to flash in the centre of the Viewfinder. When the last segment has disappeared, the "CAMERA" Indication Lamp starts to flash for a few seconds, and then the Movie Camera automatically switches itself off. Replace the Battery Pack with a fully charged one.
	Tape (p. 6) When no video cassette is inserted or when the tab of the inserted video cassette is broken out, this indication flashes. Insert a video cassette with intact tab.
	Button-Type Battery (p. 24) When no Button-Type Battery is inserted, or when the inserted battery is exhausted. Insert a new Button-Type Battery (CR 2032).
	End of the Tape When the tape has reached its end, this indication appears. Insert a new cassette.
	Error Code If the "F" Indication appears in the Viewfinder, the "CAMERA" Lamp starts to flash, and one minute later, the Movie Camera automatically switches itself off. If the "F" Indication appears in the Viewfinder, write down the figure next to the "F" Indication and tell it to the service personnel.


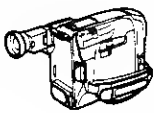
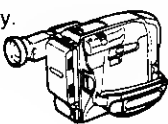
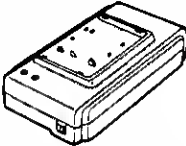
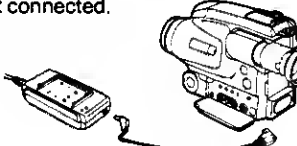
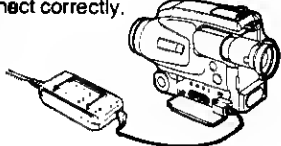
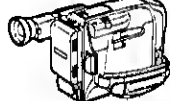
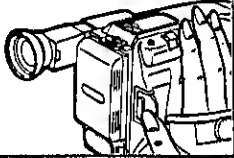



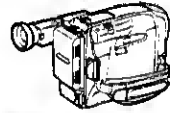
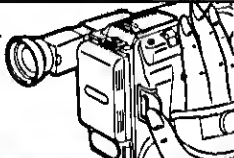

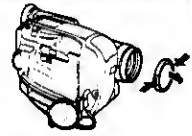

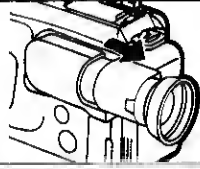
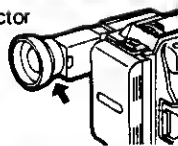
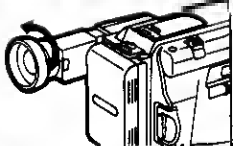
2 Shooting/Playback Indications



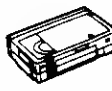








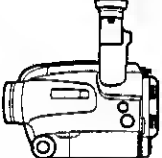


Viewfinder	Condition
	Shooting Mode (large indication) (p. 10) When the Start/Stop Button is pressed from the Shooting Pause Mode, this indication is displayed for approx. 1 second.
	Shooting Mode (small indication) (p. 10) "REC" means Recording.
	Tape Run Indication (p. 10)
	Shooting Pause Mode (large Indication) (p. 12) When the Start/Stop Button is pressed from the Shooting Mode, this indication is displayed for approx. 1 second.
	Shooting Pause Mode (small indication) (p. 12)
	Recording Review Mode (p. 12) "CHK" means Check.
	Recording Speed Indication SP: means Standard Play. (p. 10) LP: means Long Play. The mode can be selected with the [SP/LP] Button.
	Playback/Search Mode (p. 12, 14)
	Fast Forward/Cue Mode (p. 14)
	Rewind/Review/Search Mode (p. 12, 14)
	S-VHS Format (p. 10)

Viewfinder	Condition
	Still Playback Mode (p. 15)
	Tape Counter (p. 30)
	Tape Counter with activated Memory Function (p. 30) "M" means Memory.
	Remaining Tape Time (p. 30) "R" means Remaining.
	Tape Length (p. 30) The Tape Length Indication can be selected with the [TAPE] Button.
	Date and Time (p. 24)
	Zoom Magnification (p. 18, 26) When zooming in on a subject, the indicated zoom magnification value increases.
	Manual White Balance Mode (p. 33)
	Manual Shooting Mode (p. 32) "MNL" means Manual.
	Sports Mode (p. 22) This Indication is displayed when the Sports Mode has been selected.
	Digital Image Stabilizer Mode (p. 26) The "D.ZOOM" Indication appears, too.
	Digital Zoom Mode (p. 26) "D" means Digital.
	Hi-Fi Mode During playback of hi-fi sound, the "Hi-Fi" Indication is displayed in the Viewfinder.

Viewfinder	Condition
	Digital Gain-up Mode (p. 26) When the sensitivity is increased to 8 times, the "GAIN 8x" Indication appears.
	Digital Mix-Mode (p. 28) The "MIX" Indication is displayed when a still picture is in the digital memory.
	Digital Wipe Mode (p. 28) The "WIPE" Indication is displayed when a still picture is in the digital memory.
	Snapshot Mode (p. 18)
	Portrait Mode (p. 22) This indication is displayed when the Portrait Mode has been selected.
	Low Light Mode (p. 22) This indication is displayed when the Low Light Mode has been selected.
	Manual Focus Mode (p. 32) "MF" means Manual Focus.
	Index (p. 50) While this indication is visible, an index signal is being recorded.
	Audio Dubbing Mode (p. 34)
	Audio Dubbing Pause Mode (p. 34)
	VITC and Camera Information (p. 35)
	Shutter Speed/Iris Value (p. 20)

Before Requesting Service

Item	Symptom	Cause	Action	Reference page
Power 	Using the Battery Pack • Movie Camera does not turn on.	• Not attached. 	• Attach it correctly. 	6
		• Not charged.	• Charge it.	6
	• Movie Camera turns off soon.	• Exhausted.	• Use a fully charged one.	6
		• Shooting was paused for more than 6 minutes.	• Turn in the [OPERATE] Switch inwards to turn off the Movie Camera, and then turn it outwards again to turn on the Movie Camera.	13
	Using the AC Adaptor 	• Movie Camera does not turn on. 	• Connect correctly. 	36
	Using any of the power sources	• [OPERATE] Switch is not turned out. 	• Turn it out. 	10
		• Movie Camera turns off soon. 	• Wait several hours.	44
Shooting  	• No picture in the Viewfinder.	• [OPERATE] Switch is not turned out. 	• Turn it out. 	10
		• Lens Cap is attached. 	• Remove it. 	8
	• Indications in the Viewfinder are not clear.	• The Viewfinder is not extended. 	• Extend it. 	8
		• Eyepiece Corrector is not adjusted. 	• Adjust it. 	8
		• Lens is dirty.	• Clean it.	16

Item	Symptom	Cause	Action	Reference page
Shooting	• Shooting cannot be started. 	• The erasure prevention tab of the inserted cassette is broken out. 	• Cover the tab hole with adhesive tape. 	16
		• No cassette is inserted. 	• Insert a cassette with intact erasure prevention tab.	6
		• Tape has reached its end. 	• Insert a new one.	44
	• Some noise from the zoom operation is picked up.	• The surroundings are very quiet.	• Use an external microphone (optional).	18
	• Date and time cannot be recorded.	• Date and time are not set. 	• Set the date and time. 	24
	• Date and time are not displayed in the Viewfinder.	• [DATE/TIME] Button was not pressed. 	• Press the [DATE/TIME] Button. 	24
		• Button-Type Battery is exhausted.	• Replace it with a new CR2032.	24
Playback (picture)	• No picture 	• [OPERATE] Switch is not turned outwards. 	• Turn the switch outwards and press the [VTR/CAMERA] Button so that the "VTR" Indication Lamp lights up.	14
		• Not connected or incorrectly connected to TV set.	• Connect correctly.	38
		• Wrong channel is selected on TV set.	• Select the correct channel.	—
	• Picture is not in colour or distorted. 	• Tracking is not adjusted.	• Adjust the tracking. 	15
	• Picture contains noise bars. 	• Cue, Review or Still Playback is activated.	• It is not a malfunction.	14

Cautions

Cautions for the Movie Camera

In case of abnormal operation of this unit (e.g. if it emits smoke or some unusual smell), immediately stop the operation and consult qualified service personnel.

■ Cautions for Use of the Movie Camera

- When a thunderstorm approaches, stop using it.
(If the AC Adaptor is being used, disconnect it from the mains outlet.)
- Do not aim the Lens at the sun.
(This could damage internal parts of the Movie Camera.)
- Do not use it in the water or in places where water or some other liquid could splash on it.
(If it is accidentally dropped into water while the AC Adaptor is being used, disconnect it from the mains outlet.)
- Do not use it with the cassette compartment facing down.
(This could cause uneven winding of the tape.)
- Do not insert or remove the video cassette in dusty places.
- Do not use the Viewfinder as a carrying handle when transporting the Movie Camera.
- Do not disassemble or reconstruct it.
- Do not subject it to strong vibrations or shocks. Handle it with care to prevent accidentally dropping it.
- Do not insert any foreign objects into the Movie Camera not spill water into it.
- Do not use it in areas with strong electric fields.
(This could negatively influence the picture quality.)
- Do not operate it near a TV set or a radio.
(This could distort the picture and sound reception.)
- Do not use it in places with steam or oily smoke.
- When unplugging the mains cable, pull it by the plug, not by the cable.

■ Cautions for Cleaning the Movie Camera

- Do not use benzine, thinner or other chemicals for cleaning, because they could change the colour and damage the surface of the camera body.
- When using a chemically treated cloth for cleaning, carefully follow the instructions for its use.
- Wipe the Movie Camera with a clean, dry cloth. Never use cleaning fluid or other chemicals.
- Clean the lens only with a blower brush (used for photo cameras) or special lens cleaning tissue (used for glasses and cameras).

■ Cautions for Storage

- Do not store this Movie Camera in the following places.
Places exposed to direct sunlight.
Places with high temperature and high humidity (e.g. in a closed car or in a bathroom).
Near heaters.
- Do not leave it in direct contact with rubber or plastic products for a long time.
- Keep it out of reach of children.

■ Cautions for Transport

- When not actually shooting, carry it in the specially designed Carrying Case.
- Keep the packing materials. When transporting it in the future, pack it in the same way as you purchased it.

■ Cautions for the Button-Type Battery

Since there is danger of explosion if the Button-Type Battery is incorrectly used, pay attention to the following points.

- Load it with its polarities (+ and -) aligned correctly.
- Do not try to short-circuit, recharge, disassemble or heat it.
- If it has leaked inside the Movie Camera, wipe the inside of the Battery Holder clean. Then insert a new battery (Panasonic CR2032).
(Be sure to use only the same or an equivalent type of Button-Type Battery as recommended by the equipment manufacturer.)
- Keep it out of reach of children.
- Do not dispose of any battery (Battery Pack, Button-Type Battery) whose life has reached its end together with your regular household waste. When purchasing a new battery, consult your dealer about disposing of the old battery.

■ Cautions for the Video Head Clogging

When the "U 11/ ☒" flashes, consult qualified service personnel.

It is not recommended to use head cleaning tapes in this Movie Camera, because they may cause damage or the tape may become stuck. The removal of head cleaning tape is not covered by warranty.

If Condensation Has Formed Inside the Movie Camera, Shooting is Not Possible.

■ Symptoms of Condensation

- If the following symptoms occur, condensation has formed inside the Movie Camera.
 - ① The Condensation Indication in the Viewfinder flashes.
(After this indication flashes for few seconds, the Movie Camera will automatically turn itself off again.)
 - ② When turning on the Movie Camera, it turns itself off.
(However, the Movie Camera also turns itself off when the Battery Pack is exhausted.)

■ Remedy

- Wait a few hours before operating the Movie Camera again.
(The actual time depends on the surrounding conditions.)
- Turn on the Movie Camera.
- Confirm that the Condensation Indication is not displayed any more.
- For added safety, wait about 1 more hour.

■ Remarks about Condensation

- The Movie Camera is suddenly brought from cold surroundings to a place where is hot or humid.
- Since condensation forms gradually, there may already be some condensation inside the Movie Camera even before the Condensation Indication begins to flash.
- In an extremely cold place, condensation may freeze and turn into frost. As the Movie Camera cannot detect frost, the Condensation Indication does not appear until the frost melts and turns into dew.

■ Precautions against Condensation

When moving it from a very cold place to a very warm place, keep it in a tightly closed plastic bag or similar to prevent condensation from forming.

Cautions for the AC Adaptor

■ Cautions for Use

- Before connecting the AC Adaptor to an AC mains socket confirm that the voltage and frequency on the rating plate match the local AC mains voltage and frequency.
(The AC Adaptor can be used within a voltage range of AC 100 V–240 V, and a frequency of 50 or 60 Hz.)
- Do not handle the AC Adaptor with wet hands.

■ Cautions for Cleaning

- Before cleaning the AC Adaptor, make sure that it is disconnected from the AC mains socket.


Cautions for the Battery Pack

■ Cautions for Use

- For charging, be sure to use only the specially designed AC Adaptor or Battery Charger.
- When the operation time even after proper charging is too short for normal use, the service life of the Battery Pack has reached its end.
(It can be charged approx. 200 times.)
- Do not try to assemble or reconstruct it.
- Do not throw the exhausted Battery Pack into a fire.
- Make sure that no metal objects touch the contacts of the Battery Pack.
(When carrying it in a bag or similar, take care that keys, coins, etc. do not contact it.)
- When charging the Battery Pack, disconnect the DC Input Cable (page 6) from the AC Adaptor.
- Charge the Battery Pack at an ambient temperature between 10°C and 35°C.
The Battery Pack's ability to generate electric energy is based on a chemical reaction. This reaction can take place better at high temperatures. Therefore, when shooting at low ambient temperature, the maximum shooting time may be considerably shorter than listed on page 7.
- If in spite of normal recharging, the operation time of the Battery Pack becomes too short for practical use, the service life of the Battery Pack has reached its end.
- Do not recharge the Battery Pack when it is already fully charged.
- During shooting or during recharging, the Battery Pack may become warm. However, this does not pose any problem.
- When the Battery Pack has become exhausted and the Movie Camera has turned off automatically, remove the Battery Pack before connecting the DC Input Cable of the AC Adaptor to the Movie Camera, otherwise the Movie Camera cannot be turned on.

■ Hints for Optimum Charging

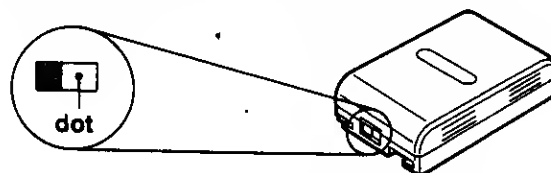
If the Battery Pack is left unused after charging, gradual self-discharging will occur. And if it is recharged repeatedly when not yet completely discharged, the "Memory Effect" will occur and the possible operation time becomes shorter. Therefore, pay attention to the following points before using the Battery Pack.

1. Use it until the "  " Indication in the Viewfinder starts to flash.
2. Recharge it completely.
(For optimum charge, continue charging for 2 hours after the [CHARGE] Lamp goes off.)

To recharge a Battery Pack whose operation time has become too short for practical use, or which has been stored for a long period of time.
Continue charging for 24 hours even after the Charging Lamp on the AC Adaptor goes out.
(If this does not result in an operation time sufficient for practical use, the service life of this Battery Pack has reached its end. Replace it with a new one.)

Charging Confirmation Marker

Use this marker to distinguish between charged and discharged Battery Packs. For example, slide the Button so that the dot is visible after charging is complete.



Hints for setting the Date and Time

For example: To set clock to October 15, 1993, 12:30...

- 1 Turn out the [OPERATE] Switch. (The Movie Camera is switched on.)
- 2 Press the [DATE/TIME] Button.
- 3 Keep the [SHIFT] Button pressed to make the "Year" portion flash.
- 4 Press the [SET] Button to set to "1993".
- 5 Press the [SHIFT] Button to make the "Month" portion flash.
- 6 Press the [SET] Button to set to "10".
- 7 Press the [SHIFT] Button to make the "Day" portion flash.
- 8 Press the [SET] Button to set to "15".
- 9 Press the [SHIFT] Button to make the "Hour" portion flash.
- 10 Press the [SET] Button to set to "12".
- 11 Press the [SHIFT] Button to make the "Minute" portion flash.
- 12 Press the [SET] Button to set to "30".
- 13 Press the [SHIFT] Button.

Changing the Figures of the Date/Time Indication

By pressing the [SET] Button repeatedly, the Date/Time Indication can be changed in the following order.

For example:

Year: 1990→1991→ 2089→1990→...
Month: 1→2→ →12→1→...
Day: 1→2→ →31→1→...
Hour: 0→1→ →23→0→...
Minute: 00→01→ →59→00→...

Index Signals (VISS)

The "INDEX" Indication (p. 45) appears briefly in the Viewfinder while an index signal is being recorded. The index signals make possible the use of the VHS Index Search or Intro Scan Function when playing back the tape on a VTR equipped with these functions.

An index signal is recorded automatically in the following cases:

- When recording is started for the first time after attaching the Battery Pack.
- When recording is restarted after exchanging the cassette or after playing back the tape by pressing the [PLAY] Button.

Cautions for Use of the Digital Image Stabilizer Function

- When using the Digital Image Stabilizer Function, the shutter speed is automatically adjusted 1/120 s.
- Cancelling the Digital Image Stabilizer Function also resets the shutter speed to 1/50 s. However, after selecting the Sports Mode or the Portrait Mode, cancelling the Digital Image Stabilizer Function does not reset the shutter speed to 1/50 s.

In the Following Shooting Conditions, the Picture Stabilizing Effect May not Be Sufficient:

- A subject with horizontal or vertical stripes
- A flat subject
- A dark subject
(The Digital Image Stabilizer Indication " " flashes in the Viewfinder.)
Increase the amount of light.
- A subject under many fluorescent lamps
- A fast-moving subject
- A subject with a flat background

Caution for the Remaining Tape Time Indication

■ **When Inserting an EC45-type Video Cassette**
Press the [TAPE] Button to change the Tape Length Indication in the Viewfinder to " 45" so that the Remaining Tape Time Indication (p. 30) will be correct.

Cautions for Use of the Sports Mode

- The subject must be brightly lit by sunlight or a Video DC Light (optional), with little shade.
- When shooting under fluorescent, mercury-vapor or sodium lamps, the picture will be adversely influenced by flickering.
- When a scene shot in the Sports Mode is played back in the normal playback mode, the picture movement may not be as smooth as normally.
- Since the picture is recorded with a high shutter speed, the playback picture will be slightly darker.

Cautions for Automatic White Balance Adjustment

In the following shooting situations, shoot with Manual White Balance Adjustment:

①



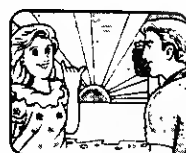
- ① When shooting under mercury-vapor, sodium or some types of fluorescent lamps etc.

②



- ② When intense lighting is used, e.g. spot lights in a theatre or when the colour temperature of the light source is low.

③



- ③ When shooting at sunrise or sunset.

- ④ When shooting with an ND Filter (optional) or a Conversion Lens (optional).

Cautions for Manual White Balance Adjustment

- Under weak illumination, Manual White Balance Adjustment may not be possible. In this case, shoot in the "AUTO" Mode.
- If an additional light source with low colour temperature (e.g. halogen lamp) is used momentarily while shooting a subject with high colour temperature (e.g. blue sky or TV screen), unnatural colours will result.
- The manually adjusted white balance setting will be maintained until it is cancelled. However, to ensure optimum colour reproduction, it is recommended to adjust the white balance for each new scene.

Cautions for Use of Auto Focus

In the following shooting situations, use the Manual Focus Mode:

①



- ① A subject with shiny surfaces or much light reflection

②



- ② A subject behind glass that is covered with dirt, dust or water drops

③



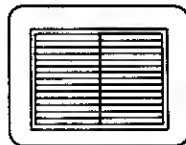
- ③ A subject with a part of it near the Movie Camera and another part far away from it

④



- ④ A flat surface, e.g. a white wall

⑤



- ⑤ A subject with horizontal stripes




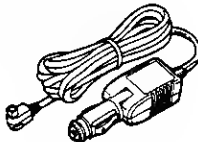


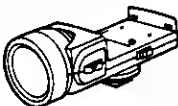
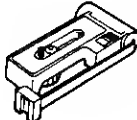






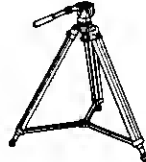
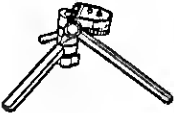
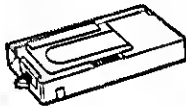
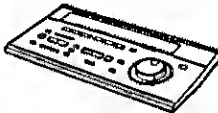
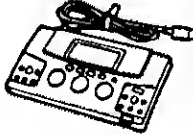

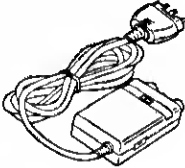
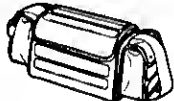
⑥



- ⑥ An oblique subject

- A fast-moving subject
- A subject with a dark surface
- When using the Macro Close-up Function, special lenses or filters

Optional Accessories

Battery Pack VW-VBS10E VW-VBH10E 	Battery Pack VW-VBS20E VW-VBH20E 	Car Battery Charger VW-KBC2E 	Car Battery Cord VW-ACC2E 	5 Pin Synchro Cord VW-K10E 
System Case VW-SHCS5E 	Video DC Light VZ-LDCS13E 	Shoe Adaptor VW-SK9E 	Filter Kit VW-LF37E 	Special Effect Filter Kit (A) VW-LFA37E 
Special Effect Filter Kit (B) VW-LFB37E 	Tele Conversion Lens VW-LT3714E 	Wide Conversion Lens VW-LW3707E 	Standard Tripod VZ-CT55E 	Deluxe Tripod VZ-CT75E 
Table Tripod VZ-CTT1E 	Cassette Adaptor VW-TCA7E 	Editing Controller VW-EC310E 	Editing Controller VW-EC1E 	Video Titrer VW-VT1A 
RF Adaptor VW-RF7E 	Soft Bag VW-SBS5E 			

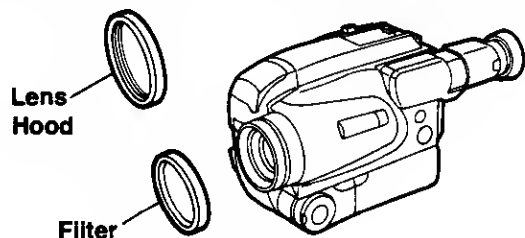
Notes:

- Consult your dealer for details of other accessories not listed here.
- When using the Video DC Light, the Shoe Adaptor (optional) is necessary.

Battery Pack No.	Charging Time	Max. Shooting Time
VW-VBS10E	Approx. 50 min.	Approx. 40 min.
VW-VBS20E	Approx. 100 min.	Approx. 80 min.
VW-VBH10E	Approx. 60 min.	Approx. 50 min.
VW-VBH20E	Approx. 120 min.	Approx. 100 min.

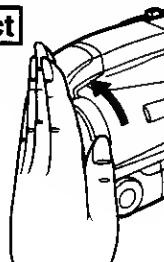
■ Lens Hood

Before attaching an optional filter or conversion lens, first remove the Lens Hood from the Movie Camera.

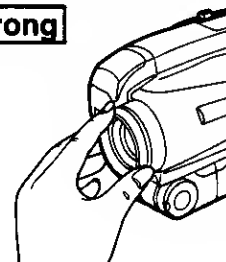


- To remove the Lens Hood, press with the palm of your hand against it and turn in the direction of the arrow.

Correct



Wrong



Specifications

S-VHS-C Movie

Information for your safety

Power Source:	4.8 V (Battery Pack) 6.0 V (AC Adaptor)
Power Consumption:	8.3 W (Battery Pack Operation)
Video Recording System:	Rotary four heads, helical scanning system
Tape Speed:	SP: 23.39 mm/s LP: 11.7 mm/s
Tape Format:	S-VHS/VHS-C tape
Recording/Playback Time:	SP: 45 min. with NV-SEC45XD LP: 90 min. with NV-SEC45XD
VIDEO	
Television System:	CCIR; 625 lines, 50 fields PAL colour signal
Modulation System:	Luminance; FM azimuth recording Colour signal; Converted subcarrier phase shift recording
Output Level:	VIDEO OUT (PHONO); 1.0 Vp-p, 75 ohm unbalanced S-VIDEO OUT; 1.0 Vp-p, 75 ohm unbalanced
AUDIO	
Output Level:	AUDIO OUT (PHONO); -8 dB, 47 kohm loaded
Input Level:	MIC IN (M3); -70 dB, 4.7 kohm or more unbalanced
Audio Track:	1 track (Normal-Monaural) 2 channels (HiFi Sound-Stereo)
Image Sensor:	1/3-inch CCD Image Sensor
Lens:	10:1 Variable Speed Power Zoom Lens with Digital AI Auto Focus Focal Length 6-60 mm F1.6 Auto Iris Filter Diameter 37 mm
Viewfinder:	0.5-inch Electronic Viewfinder
Standard Illumination:	1,400 lux
Minimum Required Illumination:	1 Lux (Digital Gain-Up Mode)
Video Horizontal Resolution:	S-VHS; More than 400 lines (S-Video out) VHS; More than 250 lines
Signal-to Noise Ratio:	Video; More than 43 dB (SP) Audio; More than 47 dB (Hi-Fi) More than 41 dB (Normal)
Audio Frequency Response:	Hi-Fi; 50-20,000 Hz Normal; 80-8,000 Hz (SP)
Operating Temperature:	0°C-40°C
Operating Humidity:	10%-80%
Weight:	Approx. 780 g (without Battery Pack)
Dimensions:	Approx. 112 (W) × 117 (H) × 216 (D) mm

AC Adaptor

Information for your safety

Power Source:	AC 100-240 V, 50-60 Hz (Automatic voltage adjustment)
Power Consumption:	25 W
DC Output:	DC 6 V, 11.8 W (Movie Camera operation) DC 4.8 V, 1.6 A (Battery Pack charging)
Weight:	Approx. 240 g (without AC Cable)
Dimensions:	Approx. 72 (W) × 39 (H) × 143 (D) mm

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.



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